UK MET OFFICE
GLOBAL DATA MONITORING REPORT

March 2005

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Exeter. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Exeter in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background) field, although to provide background values valid at the observation time for non-main hour data, time-interpolation of the T+3, T+6 and T+9 forecasts is used; and for sea surface temperature the background field is the analysis from the previous day. Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Exeter and assimilated into model runs. All data are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Exeter and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Exeter and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

Figures 55-69 show sounding statistics from the polar orbitting satellite NOAA-17. Figure 55 shows the mean daily number of ATOVS soundings, and figures 56-69 show mean and standard deviation observation-background differences for brightness temperature for selected channels.

Figure		Weighting function peak (hPa)
56	Mean	Surface (HIRS8)
57	SD	Surface (HIRS8)
58	Mean	700 (HIRS15)
59	SD	700 (HIRS15)
60	Mean	500-700 (HIRS11)
61	SD	500-700 (HIRS11)
62	Mean	400 (HIRS4)
63	SD	400 (HIRS4)
64	Mean	700 (AMSUA5)
65	SD	700 (AMSUA5)
66	Mean	300 (AMSUA7)
67	SD	300 (AMSUA7)
68	Mean	100 (AMSUA9)
69	RMS	100 (AMSUA9)

N.B. All satellite sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Exeter during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Exeter in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Exeter from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.
25. December 2002. Included statistics for ATOVS sounding data from NOAA-17.
26. December 2002. Meteosat-7 and Meteosat-5 SATOB winds replaced by higher resolution BUFR-coded winds.
27. November 2003. Included temperature and relative humidity statistics for ships, fixed buoys and platforms in Table 1.
28. November 2003. NOAA 17 statistics no longer available due to malfunction of the AMSU-A instrument.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).
:Air temperature (Degrees C).
:Relative Humidity (%).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:PGE :Percentage of observations with gross errors.

:%REJ :Percentage of observations flagged excluding those with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)
:15 degrees (air temperature)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 $m\ s^{-1}$	(wind speed),
	≥ 30 degrees	(direction).
	≥ 3 degrees	(sea surface temperature).
	≥ 4 degrees	(air temperature)
	≥ 15%	(relative humidity)
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
	≥ 5 degrees	(sea surface temperature).
	≥ 6 degrees	(air temperature)
	≥ 25%	(relative humidity)
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8AV7	P	43	0	49	0.8	-4.5	4.6
A8CF3	P	41	0	0	0.8	-6.5	6.6
A8DU3	P	24	88	100	3.3	-10.9	11.4
A8EU2	P	36	0	0	0.7	4.3	4.3
C6FZ6	P	23	0	52	1.2	-5.0	5.1
C6PZ3	P	24	4	42	0.7	4.9	5.0
DEAZ	P	29	0	0	0.8	4.3	4.4
ELYY5	P	77	0	4	2.0	4.3	4.7
KS012	P	239	0	44	0.5	-5.6	5.6
KS049	P	234	0	40	0.9	-4.9	5.0
MGJS8	P	33	0	100	0.9	7.0	7.0
PINX	P	20	0	35	1.8	4.1	4.5
P3JG9	P	27	0	15	1.1	-4.0	4.1
UGGA	P	55	33	100	6.0	-4.2	7.3
VTXL	P	22	0	100	2.1	6.8	7.1
VVCZ	P	23	0	87	1.2	5.3	5.4
V2FY	P	53	0	0	0.7	4.1	4.1
V2GR	P	38	0	0	1.2	4.6	4.7
WDB9984	P	24	0	46	1.0	-5.9	6.0
XXXX	P	139	100	100			
ZCBU4	P	25	0	52	1.6	4.4	4.7
ZCDF8	P	20	0	5	1.5	-4.7	5.0
ZCDG7	P	64	0	66	1.6	4.5	4.8
41030	P	27	0	100	1.3	6.2	6.3

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8DU3	SPEED	24	0	25	3.7	6.3	7.3
A8FI4	SPEED	24	0	4	3.3	5.2	6.1
A8FZ5	SPEED	84	4	24	5.1	6.4	8.1
C6LU4	SPEED	20	0	20	5.6	5.2	7.6
C6QF6	SPEED	27	7	100	4.4	7.8	8.9
DHDM	SPEED	42	2	17	6.2	5.7	8.4
LAEP4	SPEED	23	0	22	4.3	5.2	6.8
MDGV9	SPEED	30	0	70	3.7	5.0	6.2
S6JP	SPEED	43	0	100	2.6	6.1	6.6
TSMU	SPEED	61	5	77	5.6	5.5	7.9
UBXP	SPEED	41	0	71	6.4	8.5	10.7
UCJO	SPEED	28	32	61	4.1	0.6	4.2
VEP717	SPEED	221	0	3	3.4	5.0	6.1
WDA3588	SPEED	45	0	100	2.9	5.8	6.5
41030	SPEED	21	0	81	1.8	-7.2	7.4

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
EIQN	DIRN.	58	31	0	94.0	51.1	107.0
KS044	DIRN.	23	0	0	13.5	-76.6	77.8
KS045	DIRN.	39	3	0	103.0	56.1	117.2
LDGJ	DIRN.	99	18	0	92.5	25.6	95.9
VQFV3	DIRN.	25	0	0	42.7	-31.8	53.2
52077	DIRN.	33	0	0	101.7	-75.8	126.8
52083	DIRN.	345	0	0	21.4	42.2	47.4
62144	DIRN.	27	0	0	17.3	-35.2	39.2
63055	DIRN.	373	4	0	108.8	-29.3	112.7
9HQK6	DIRN.	51	0	0	46.9	-32.2	56.9

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS

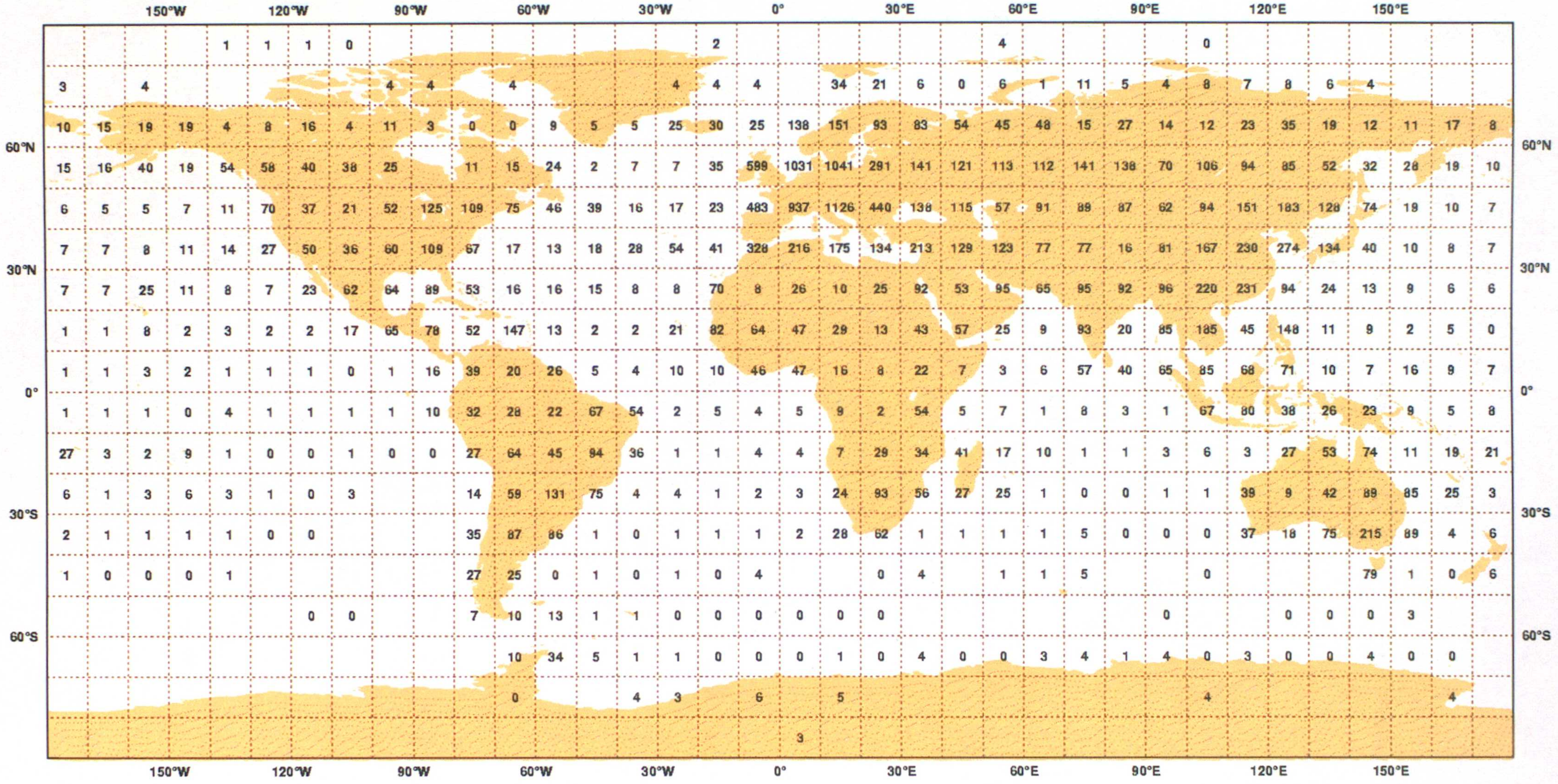
SP33	T	119	0	100	2.8	-7.9	8.3
UCJJ	T	91	4	100	3.6	-6.6	7.5
UEMM	T	32	3	100	4.3	-5.5	7.0
WCW9126	T	104	0	100	3.0	5.0	5.8
WDA3588	T	120	2	100	2.9	4.1	5.0
WDB6493	T	27	0	100	2.4	4.4	5.0
WWU8	T	29	0	100	3.5	5.6	6.6
WXKM	T	22	27	100	1.3	0.0	1.3
XXXX	T	140	16	100	1.5	12.3	12.4
46081	T	715	2	100	2.9	6.1	6.8

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CI8	RH	34	0	100	6.7	15.3	16.7
CGDX	RH	23	0	100	15.9	-18.8	24.6
CGSB	RH	234	0	100	13.0	-18.6	22.7
DFPC	RH	57	0	100	8.4	17.4	19.3
ELOV9	RH	35	0	100	9.0	15.6	18.0
FNAT	RH	51	0	100	6.1	22.4	23.2
FPOD	RH	44	0	100	27.5	6.7	28.3
OUEW	RH	87	0	100	21.3	-21.4	30.2
P3ZY6	RH	22	0	100	8.4	15.7	17.8
SCKM	RH	21	0	100	27.4	-6.0	28.1
UCPE	RH	24	0	100	21.8	-58.2	62.1
VRUR7	RH	26	0	100	18.7	15.8	24.5
V2AF4	RH	24	0	100	8.6	15.0	17.3
XXXX	RH	139	0	100	7.3	-60.7	61.2
ZCBV6	RH	64	0	100	6.1	16.8	17.9
62402	RH	41	0	100	9.0	-20.7	22.6

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A3BN5	SST	29	0	48	2.3	-4.7	5.2
A8DP8	SST	21	0	100	0.6	3.0	3.1
CGDR	SST	289	1	109	1.3	6.0	6.1
C6KJ5	SST	36	0	100	1.2	4.1	4.3
C6RJ6	SST	39	0	100	0.8	-3.1	3.2
DBBA	SST	654	0	52	1.9	4.5	4.9
DBBU	SST	600	1	38	2.5	3.0	3.9
DBBX	SST	537	0	84	1.8	6.0	6.3
DBBXX	SST	60	0	83	1.8	5.9	6.1
DBFC	SST	569	0	46	3.2	3.7	4.9
DGVC	SST	52	6	52	4.8	3.6	5.9
DIDY	SST	22	0	32	0.8	-3.5	3.5
DPJC	SST	36	0	14	1.9	-3.1	3.6
ELXO3	SST	25	4	32	1.2	-3.4	3.6
FNIA	SST	48	35	60	3.7	3.0	4.7
KS028	SST	139	22	81	2.0	5.4	5.8
KS049	SST	204	0	51	2.4	-3.2	4.0
LAIP5	SST	30	10	33	0.9	-3.1	3.2
LAVV4	SST	21	14	48	3.2	-3.6	4.8
P3FN9	SST	21	0	33	1.3	-3.6	3.8
S6IW	SST	43	0	37	0.9	3.9	4.0
UCAD	SST	30	0	50	2.0	3.9	4.4
UIDO	SST	22	0	59	2.4	4.2	4.8
VRZQ8	SST	45	0	38	2.2	-3.8	4.3
V7BW7	SST	49	4	78	1.2	-3.2	3.4
V7DS8	SST	28	0	75	2.1	-4.8	5.3
WAAH	SST	85	1	100	1.6	3.9	4.2
WGJF	SST	46	7	100	1.8	-4.4	4.8
WTER	SST	27	0	63	3.3	-3.3	4.7

Y3CH	SST	399	2	64	3.2	4.4	5.4
3EMQ9	SST	36	0	100	0.8	-3.8	3.9
3FDN9	SST	79	0	100	1.0	3.0	3.2
3FHJ6	SST	33	0	6	0.5	3.0	3.0
3FKM8	SST	31	0	103	2.6	-5.2	5.8
3FPA6	SST	58	0	102	3.0	6.1	6.8
41008	SST	685	0	66	1.0	-3.3	3.5
41013	SST	364	0	51	1.8	-3.3	3.7
41025	SST	234	0	83	5.2	-3.8	6.5
42021	SST	533	0	100	1.0	-3.9	4.0
44014	SST	686	0	87	0.9	-3.4	3.5
44032	SST	626	0	59	1.2	3.1	3.3
44137	SST	688	0	100	2.9	4.3	5.2
45139	SST	637	0	100	0.2	4.1	4.1
9HCH7	SST	41	2	100	0.6	3.7	3.8

Figure 1. SHIP/SYNOP mean daily count. MARCH 2005
All hours
Global average number of observations in 24 hours = 20790



				1	1	1	0									2							4					0							
3		4						4	4		4				4	4	4		34	21	6	0	6	1	11	5	4	8	7	8	6	4			
10	15	19	19	4	8	16	4	11	3	0	0	9	5	5	25	30	25	138	151	93	83	54	45	48	15	27	14	12	23	35	19	12	11	17	8
15	16	40	19	54	58	40	38	25		11	15	24	2	7	7	35	599	1031	1041	291	141	121	113	112	141	138	70	106	94	85	52	32	28	19	10
6	5	5	7	11	70	37	21	52	125	109	75	46	39	16	17	23	483	937	1126	440	138	115	57	91	89	87	62	94	151	183	128	74	19	10	7
7	7	8	11	14	27	50	36	60	109	67	17	13	18	28	54	41	328	216	175	134	213	129	123	77	77	16	81	167	230	274	134	40	10	8	7
7	7	25	11	8	7	23	62	64	89	53	16	16	15	8	8	70	8	26	10	25	92	53	95	65	95	92	96	220	231	94	24	13	9	6	6
1	1	8	2	3	2	2	17	65	78	52	147	13	2	2	21	82	64	47	29	13	43	57	25	9	93	20	85	185	45	148	11	9	2	5	0
1	1	3	2	1	1	1	0	1	16	39	20	26	5	4	10	10	46	47	16	8	22	7	3	6	57	40	65	85	68	71	10	7	16	9	7
1	1	1	0	4	1	1	1	1	10	32	28	22	67	54	2	5	4	5	9	2	54	5	7	1	8	3	1	67	80	38	26	23	9	5	8
27	3	2	9	1	0	0	1	0	0	27	64	45	94	36	1	1	4	4	7	29	34	41	17	10	1	1	3	6	3	27	53	74	11	19	21
6	1	3	6	3	1	0	3			14	59	131	75	4	4	1	2	3	24	93	56	27	25	1	0	0	1	1	39	9	42	89	85	25	3
2	1	1	1	1	0	0				35	87	86	1	0	1	1	1	2	28	62	1	1	1	1	5	0	0	0	37	18	75	215	89	4	6
1	0	0	0	1						27	25	0	1	0	1	0	4			0	4		1	1	5			0				79	1	0	6
						0	0			7	10	13	1	1	0	0	0	0	0	0							0			0	0	0	3		
											10	34	5	1	1	0	0	0	1	0	4	0	0	3	4	1	4	0	3	0	0	4	0	0	
											0			4	3		6		5									4						4	
																		3																	

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		: All hours
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees). :Sea surface temperature (degrees).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	: Percentage of observations flagged excluding those with gross errors
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the wind observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa :25 m s^{-1} :10 degrees	(pressure) (vector wind) (sea surface temperature)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.$\lvert$bias$\rvert$	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
		≥ 3 degrees	(sea surface temperature).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
		≥ 5 degrees	(sea surface temperature).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

```
IDENTIFIER  LAT.   LONG.   ELEM    NOBS  PGE  %REJ    SD    BIAS    RMS

21928       33.0   146.0     P      271   10    55   6.0     1.7    6.3
21931       31.7   155.2     P      267   68   100   3.2   -11.1   11.5
21932       37.3   154.8     P      228   97   100   1.2   -12.8   12.8
25572       84.8   -29.1     P       41   37   100   2.6   -10.6   10.9
25573       82.6   142.1     P       32   13   100   6.9    -2.4    7.4

33577      -35.3   -16.0     P      291  100   100
41920       20.1   -67.5     P      114    4    96   2.2     8.2    8.5
41921       26.9   -72.4     P      554    7   100   4.6     5.4    7.1
41939       34.3   -59.0     P      636    1   100   1.1    -5.2    5.3
52685       18.4   121.8     P      408   47    87   5.1     1.9    5.4

52686       26.3   128.0     P       95   54    94   8.3    -4.9    9.7
56524       13.5  -134.7     P       51   67    69   2.0    -0.2    2.0
56527       26.7   -82.0     P       23   96    96   0.0    -0.7    0.7
56539       26.7   -82.0     P       23   96    96   0.0    -0.7    0.7
56540       26.7   -82.0     P       20  100   100

61556       41.2    29.1     P       50   38   100   2.2    -9.5    9.8

IDENTIFIER  LAT.   LONG.   ELEM    NOBS  PGE  %REJ    SD    BIAS    RMS

41924       22.7   -73.2   SPEED     31   32   100   8.7     4.2    9.6

IDENTIFIER  LAT.   LONG.   ELEM    NOBS  PGE  %REJ    SD    BIAS    RMS

56506      -15.8   121.2   DIRN.    166    0     0  68.8   ***** 134.5

IDENTIFIER  LAT.   LONG.   ELEM    NOBS  PGE  %REJ    SD    BIAS    RMS

17559      -33.7   -20.0    SST     698    0   100   1.2     6.8    6.9
21934       35.5   133.0    SST      77   27    82   4.1    -4.8    6.3
22614       12.2   109.2    SST      97    2    96   1.6    -7.6    7.8
32538       -3.8   -89.4    SST     234    0    99   0.3    -3.5    3.5
32620       -4.8   -95.6    SST     222    0   100   0.2    -3.7    3.7

32623        2.5   -85.7    SST     235    0   100   0.2    -3.6    3.6
32693       15.4  -174.2    SST     895    0   100   0.3     3.0    3.0
32741        0.8   -91.2    SST     210    0    98   0.8    -4.2    4.3
32804       -1.8   -87.9    SST      35    0    89   0.9    -3.5    3.6
44728       41.8   -49.6    SST     692    0    84   2.1    -5.5    5.9

46972       16.4   132.5    SST     367    0   100   0.5     4.6    4.7
52686       26.3   128.0    SST      89    0    69   2.5    -3.9    4.6
53576       20.5   110.4    SST     338    0   100   0.8    -4.6    4.6
```

Figure 2. DRIFTER mean daily count. MARCH 2005
All hours
Global average number of observations in 24 hours = 17911

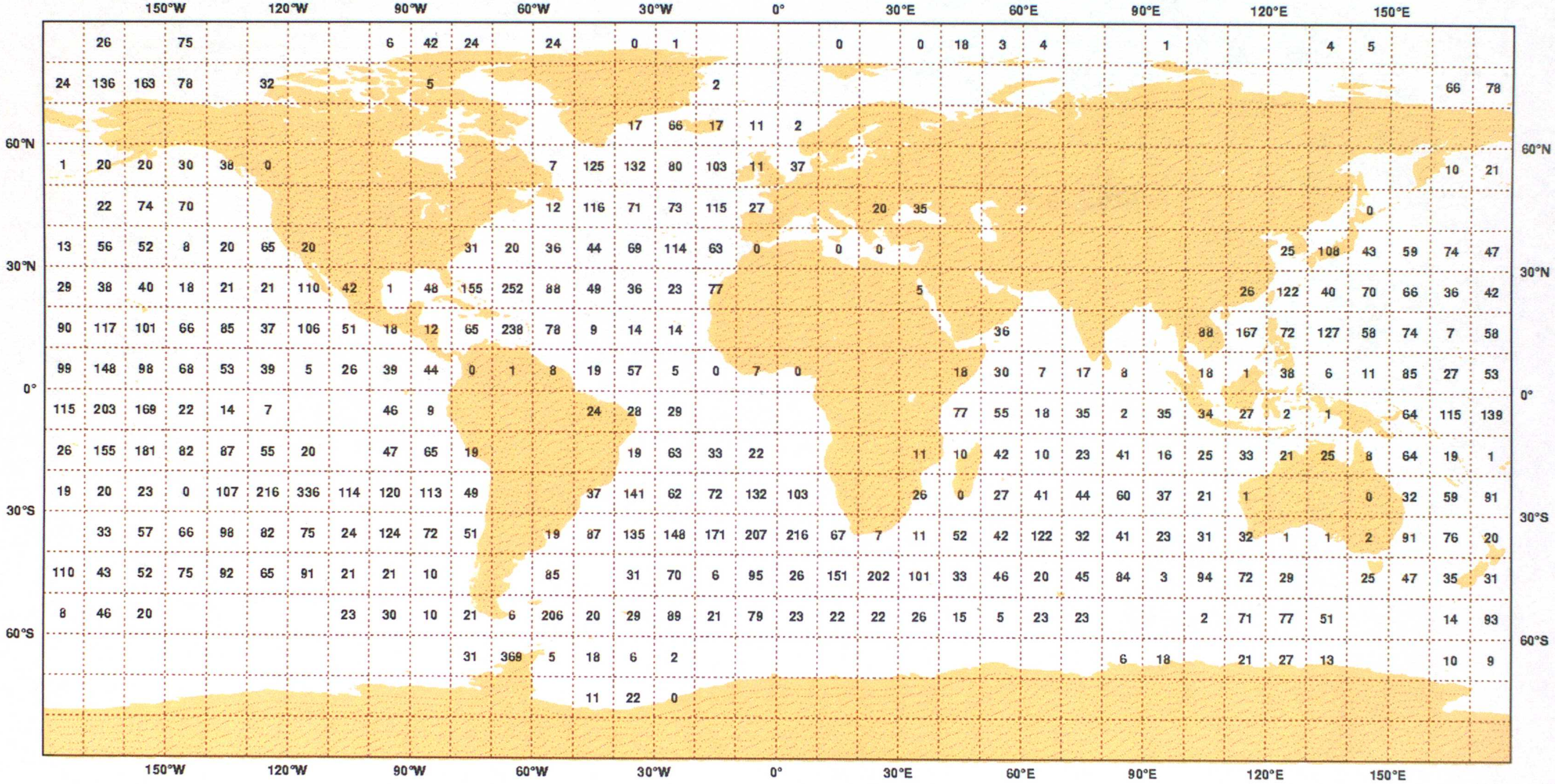

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
26 75 6 42 24 24 0 1 0 0 18 3 4 1 4 5
24 136 163 78 32 5 2 66 78
17 66 17 11 2
1 20 20 30 38 0 7 125 132 80 103 11 37 10 21
22 74 70 12 116 71 73 115 27 20 35 0
13 56 52 8 20 65 20 31 20 36 44 69 114 63 0 0 0 25 108 43 59 74 47
29 38 40 18 21 21 110 42 1 48 155 252 88 49 36 23 77 5 26 122 40 70 66 36 42
90 117 101 66 85 37 106 51 18 12 65 238 78 9 14 14 36 88 167 72 127 58 74 7 58
99 148 98 68 53 39 5 26 39 44 0 1 8 19 57 5 0 7 0 18 30 7 17 8 18 1 38 6 11 85 27 53
115 203 169 22 14 7 46 9 24 28 29 77 55 18 35 2 35 34 27 2 1 64 115 139
26 155 181 82 87 55 20 47 65 19 19 63 33 22 11 10 42 10 23 41 16 25 33 21 25 8 64 19 1
19 20 23 0 107 216 336 114 120 113 49 37 141 62 72 132 103 26 0 27 41 44 60 37 21 1 0 32 59 91
33 57 66 98 82 75 24 124 72 51 19 87 135 148 171 207 216 67 7 11 52 42 122 32 41 23 31 32 1 1 2 91 76 20
110 43 52 75 92 65 91 21 21 10 85 31 70 6 95 26 151 202 101 33 46 20 45 84 3 94 72 29 25 47 35 31
8 46 20 23 30 10 21 6 206 20 29 89 21 79 23 22 22 26 15 5 23 23 2 71 77 51 14 93
31 369 5 18 6 2 6 18 21 27 13 10 9
11 22 0

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

SUSPECT SYNOPS (PRESSURE) BY WMO REGION MAR 200

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60320	35.9N	5.4W	2	MS	58	0	0	2	2.0	-8.9	9.1
61492	16.1N	13.5W	18	MS	59	0	0	0	1.5	4.9	5.1
61816	10.9N	14.3W	69	MS	40	17	43	0	0.7	-1.7	1.8
62056	32.8N	21.9E	625	S8	85	1	1	4	1.8	-5.5	5.8
63210	11.3N	49.2E	2	M	28	0	0	46	0.7	-4.3	4.4
63671	1.8N	40.1E	244	M	49	0	0	6	3.0	-4.4	5.3
63801	4.9S	29.6E	882	S8	54	0	0	0	0.9	8.4	8.4
63881	8.0S	31.6E	1923	S	50	4	8	0	0.8	13.6	13.6
65355	9.8N	1.1E	342	MS	106	0	0	2	3.0	-12.1	12.5
68014	19.6S	18.1E	1411	S8	73	1	1	0	0.7	-7.2	7.2
68030	18.5S	25.6E	1071	S8	80	1	1	0	4.5	8.4	9.5
68102	19.9S	16.4E	1343	S8	61	0	0	0	0.7	5.9	5.9
68312	26.5S	18.1E	1067	S8	73	0	0	0	0.8	4.8	4.9
68325	25.4S	25.4E	1275	8	64	0	0	2	1.1	4.4	4.5
68396	26.5S	31.3E	641	S8	57	0	0	4	1.2	4.8	4.9
68575	30.0S	30.0E	1175	S8	120	120	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
25248	67.3N	168.0E	353	MS	42	0	0	45	3.3	5.9	6.8
30554	54.5N	113.6E	995	MS	121	0	0	0	0.8	12.4	12.4
35416	49.1N	54.7E	128	S	119	0	0	0	0.9	4.4	4.5
36982	41.9N	78.2E	3635	S	115	0	0	1	1.0	6.1	6.2
38565	40.6N	65.7E	485	MS	121	121	100	0			
38846	38.4N	70.0E	1437	S8	49	0	0	0	1.8	-5.5	5.8
40435	27.0N	44.1E	991	MS	55	0	0	5	2.8	6.2	6.8
40700	39.6N	47.9E	45	MS	117	0	0	0	1.0	-5.7	5.8
40713	37.4N	46.3E	1475	MS	116	50	43	0	2.0	13.2	13.4
40741	36.5N	61.2E	235	MS	117	0	0	0	1.1	-4.6	4.7
40743	36.2N	57.7E	978	MS	117	0	0	0	0.9	4.8	4.9
40757	35.6N	53.4E	1171	MS	116	0	0	0	1.1	4.6	4.7
40780	33.6N	46.4E	1362	MS	114	0	0	0	0.7	4.8	4.9
40854	29.1N	58.4E	1067	MS	115	0	0	0	1.1	11.0	11.1
41241	26.2N	56.2E	3	MS	41	0	0	95	0.6	-4.1	4.1
41252	23.4N	56.5E	244	MS	32	0	0	100	0.6	-9.0	9.0
41254	23.1N	57.6E	1755	S8	113	113	100	0			
41396	16.0N	48.9E	700	MS	46	0	0	2	1.9	6.1	6.4
41466	13.7N	44.1E	1402	8	49	0	0	94	0.8	-5.8	5.9
44212	50.0N	92.1E	940	MS	120	3	3	2	2.1	4.7	5.1
47022	40.8N	128.2E	1224	S	99	2	2	2	1.2	5.0	5.1
47155	35.2N	128.6E	5	MS	121	0	0	0	1.0	-4.3	4.4
47678	33.1N	139.8E	79	MS	121	0	0	0	0.8	-9.3	9.3
48924	21.1N	101.5E	644	S	57	0	0	2	2.0	11.1	11.3
48925	20.7N	102.0E	550	S	54	0	0	0	1.1	-10.0	10.1
48938	19.2N	101.7E	326	MS	55	28	51	0	0.6	13.9	13.9
48952	15.7N	106.4E	168	MS	49	0	0	2	1.4	-4.7	4.9
50727	47.2N	119.9E	1028	MS	121	0	0	0	0.7	4.5	4.6
50978	45.3N	130.9E	234	MS	121	0	0	0	0.7	-6.1	6.1
51243	45.6N	84.9E	428	MS	121	0	0	0	1.5	-5.6	5.8
51288	45.4N	90.5E	1651	S	121	0	0	3	1.3	-4.6	4.8
52866	36.6N	101.8E	2262	S	121	0	0	0	1.2	-4.1	4.3
53646	38.3N	109.8E	1058	MS	121	0	0	0	0.7	-12.9	12.9

56287	30.0N	103.0E	629	M	121	0	0	2	2.1	4.5	5.0
56385	29.5N	103.3E	3049	S	121	0	0	0	2.8	-4.0	4.9
56462	29.0N	101.5E	2994	S	121	0	0	0	1.3	9.2	9.3
56768	25.0N	101.5E	1773	S	121	0	0	0	0.9	-5.3	5.4
57816	26.6N	106.7E	1074	MS	121	110	91	0	0.3	-14.6	14.6
59663	21.8N	112.0E	22	MS	121	0	0	0	0.7	-8.1	8.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	122	MS	21	0	0	5	1.8	-4.9	5.2
82181	2.0S	54.1W	146	MS	86	1	1	0	1.2	5.5	5.6
82586	5.2S	39.3W	212	MS	86	0	0	0	0.9	-4.2	4.3
82704	7.6S	72.7W	170	MS	78	0	0	3	2.1	-4.9	5.3
83235	12.4S	46.4W	604	MS	89	2	2	0	1.0	6.2	6.3
83332	14.1S	46.4W	826	MS	90	21	23	3	2.7	13.4	13.7
83470	17.9S	50.9W	727	MS	88	0	0	0	0.7	-5.7	5.7
83531	18.6S	46.5W	940	MS	91	0	0	0	0.7	-6.0	6.0
83836	25.5S	50.6W	837	MS	92	0	0	0	0.7	-4.4	4.5
84425	5.9S	76.1W	179	MS	23	0	0	0	1.0	5.4	5.5
84452	6.8S	79.8W	29	MS	106	0	0	1	1.1	4.5	4.6
84455	6.5S	76.4W	281	MS	80	0	0	0	1.7	6.7	6.9
84472	7.1S	78.5W	2620	S	50	0	0	0	0.8	-5.2	5.3
84474	7.2S	76.7W	350	S	23	0	0	0	1.0	10.0	10.0
84686	13.6S	72.0W	3248	S	105	0	0	0	0.7	-4.1	4.2
84688	13.7S	73.4W	3444	S	46	0	0	0	0.8	-12.0	12.0
84782	18.1S	70.3W	468	MS	80	0	0	0	1.2	4.0	4.2
85140	14.3S	67.4W	140	MS	60	1	2	2	1.2	7.5	7.6
85264	18.5S	64.1W	1998	S	61	61	100	0			
85312	19.8S	63.9W	992	S	47	0	0	0	1.2	-10.3	10.4
85432	22.5S	68.9W	2320	S8	86	0	0	0	0.5	4.5	4.5

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71060	52.5N	116.1W	230	MS	121	121	100	0			
71177	57.1N	61.5W	834	S	120	0	0	0	1.9	-5.1	5.4
71179	54.7N	58.4W	683	S	120	0	0	0	2.3	-4.2	4.8
71181	47.1N	55.3W	29	MS	120	0	0	0	0.7	-5.9	5.9
71506	67.0N	136.2W	720	MS	114	0	0	18	2.7	-5.6	6.2
71581	54.5N	128.6W	215	MS	114	86	75	0	6.5	-6.6	9.3
76055	31.0N	114.9W	440	MS	70	70	100	0			
76225	28.6N	106.1W	1435	MS	88	0	0	0	0.8	-4.8	4.9
76543	22.0N	98.8W	104	MS	83	0	0	0	0.9	9.6	9.6
76658	19.2N	103.7W	494	MS	42	0	0	0	0.7	5.4	5.4
76683	19.3N	98.3W	2248	MS	103	0	0	1	1.2	4.2	4.4
76762	17.5N	99.5W	1265	MS	92	0	0	0	0.7	5.7	5.7
76773	17.8N	97.8W	1650	MS	23	0	0	0	0.6	6.3	6.3
76843	16.8N	93.1W	528	MS	118	0	0	0	1.0	-4.7	4.8
78588	17.2N	87.5W	-282	M	120	120	100	0			

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94130	14.8S	131.9E	120	MS	113	0	0	0	0.9	5.0	5.1
96505	3.7N	115.7E	-9999	8	32	31	97	0	0.0	-0.7	0.7
97284	8.6S	120.5E	1170	S8	65	2	3	65	0.6	4.8	4.8
97378	10.7S	123.1E	1	MS	36	35	97	0	0.0	-14.3	14.3

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01360	61.9N	7.9E	711	MS	89	0	0	0	0.9	6.9	7.0
04301	83.7N	33.4W	4	MS	113	39	35	4	1.6	0.5	1.7
06239	54.9N	44.7E	49	MS	360	91	25	0	6.9	0.1	6.9
06685	47.0N	9.1E	515	MS	120	0	0	5	1.0	6.3	6.4
08912	42.9N	0.8W	1434	MS	104	104	100	0			
08922	42.8N	0.2W	1660	MS	102	102	100	0			
10850	48.8N	10.7E	457	MS	362	0	0	0	0.4	-5.9	5.9
11116	47.5N	10.8E	870	MS	56	0	0	0	0.6	4.5	4.5
13269	44.3N	19.9E	176	MS	120	1	1	2	0.9	7.8	7.9
14554	44.9N	18.4E	136	S	56	2	4	0	0.7	-13.7	13.7
14650	43.8N	18.0E	970	S	55	0	0	0	0.8	4.0	4.1
16344	39.3N	16.4E	1710	S8	182	0	0	2	1.3	4.0	4.2
16450	37.6N	14.3E	940	S8	119	0	0	8	0.9	-6.9	7.0
16470	36.8N	12.0E	191	MS	240	0	0	0	0.8	-4.0	4.1
16538	40.1N	9.3E	1022	S	36	0	0	0	0.9	9.4	9.4
17203	38.9N	40.5E	1177	S8	114	0	0	1	1.1	4.3	4.4
17521	35.2N	33.5E	285	MS	85	85	100	0			
40030	35.1N	36.8E	301	M	73	0	0	1	1.5	-5.1	5.3
40067	32.7N	35.6E	995	S8	35	0	0	57	0.6	-4.0	4.0

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	114	0	0	1	1.4	-6.9	7.0
89257	75.4S	59.9W	40	S	654	0	0	0	1.2	-7.1	7.2
89264	71.4S	68.9W	780	S	43	0	0	0	1.3	6.5	6.6
89266	72.2S	60.2W	91	S	328	287	88	0	4.1	-4.5	6.1
89272	75.0S	70.8W	1395	S	69	69	100	0			
89512	70.8S	11.8E	140	MS	121	0	0	0	1.3	-4.1	4.3
89610	65.9S	113.1E	90	S	321	0	0	0	1.2	-8.5	8.6
89614	66.7S	111.5E	500	S	330	330	100	0			
89744	74.0S	43.1E	3353	S	244	0	0	0	0.6	6.6	6.6
89769	78.5S	168.4E	50	S	697	0	0	1	1.7	-4.1	4.4
89811	66.7S	112.8E	1366	S	322	0	0	0	1.4	-5.8	6.0
89868	79.9S	170.0E	60	S	335	0	0	0	1.3	-4.4	4.6

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	3570	0	43	1.7	0.0	3510	0	42	0	6.9	0.6
AAL	5457	0	38	1.6	0.0	5066	0	40	0	7.1	-0.3
AAR	1016	1	6	1.7	-0.9	1012	0	7	0	8.2	-0.5
ACA	2730	0	14	1.7	-0.1	2216	0	15	0	8.0	0.1
ACI	105	0	9	1.0	0.3	105	0	9	0	5.7	0.1
AEA	1583	0	3	1.7	-0.3	1359	1	6	0	8.8	-0.4
AEL	45	0	2	1.4	-0.7	44	0	7	0	10.7	-0.2
AFL	697	0	3	1.5	0.3	359	0	3	0	6.9	0.4
AFR	1757	1	7	1.5	0.2	1707	0	9	0	8.3	0.3
AJM	250	0	3	1.4	-0.4	208	1	4	0	7.8	0.6
AJX	272	1	5	2.0	0.6	273	0	7	0	9.1	-0.6
AMT	1691	0	39	1.4	-0.1	1680	0	39	0	6.7	0.0
AMX	347	2	6	1.9	0.2	292	1	10	0	12.2	-0.1
ANA	69	1	1	1.2	0.0	70	1	3	0	5.9	-0.1
ANZ	5816	0	23	1.2	0.1	5766	0	23	0	6.1	0.3
ARG	39	0	49	1.6	0.0	38	0	50	0	5.5	0.7
ATN	105	4	100	3.9	-2.0	90	0	100	0	9.1	2.0
AUA	66	2	52	5.3	3.9	63	0	5	0	8.5	-1.0
AVA	302	0	2	1.8	0.0	301	0	4	0	9.4	-0.5
AVN	153	0	46	1.2	-0.2	153	0	48	0	8.1	-0.4
AXF	56	0	39	0.9	0.5	55	0	40	0	6.3	1.0
AZA	481	1	4	1.7	0.0	412	1	7	0	9.4	0.2
BAL	520	1	6	1.6	-0.1	509	0	9	0	9.6	-0.3
BAW	645	1	16	1.9	-0.4	394	0	16	0	7.5	0.1
BBR	204	0	5	1.6	0.7	205	0	100	0	12.1	0.4
BHP	33	0	3	1.3	-0.5	32	0	6	0	7.0	-0.9
BPA	824	0	6	1.9	0.5	828	0	7	0	8.3	0.3
BWA	391	1	4	1.8	-0.3	361	0	3	0	7.6	0.0
CAL	62	0	2	1.8	-0.4	72	0	1	0	6.6	-0.6
CCA	329	2	16	2.4	0.0	351	0	100	0	12.9	-1.1
CES	291	2	11	2.2	-0.2	292	2	13	0	11.6	0.4
CFC	21	5	10	1.6	0.2	20	0	10	0	8.3	0.3
CFG	1097	0	4	1.5	0.1	983	0	5	0	8.6	0.3
CFH	36	0	36	1.0	-0.6	36	0	36	0	5.6	-0.5
CFY	27	0	0	0.8	-0.2	25	0	0	0	4.5	0.5
CGF	40	0	0	1.2	-0.3	38	0	0	0	5.8	2.0
CGH	44	0	0	1.3	0.0	40	0	3	0	5.4	0.8
CKK	136	1	10	1.9	0.4	152	1	10	0	9.4	-0.3
CKS	328	1	30	1.4	0.2	282	1	35	0	7.8	0.1
CLX	447	1	3	1.5	-0.6	278	0	5	0	8.5	-0.1
CNJ	46532	0	76	1.2	0.5	46532	0	76	0	6.0	0.5
COA	323	0	17	1.5	-0.2	239	0	22	0	9.5	-0.5
CRL	1021	1	4	1.7	0.3	984	1	7	0	8.7	0.4
CSA	47	0	4	1.7	-0.5	37	0	3	0	8.9	-0.8
CSN	101	3	8	1.7	-0.5	103	0	7	0	8.1	0.2
CUB	277	0	3	1.6	-0.2	250	1	4	0	8.4	0.3
DAB	86	0	1	0.8	-0.2	81	0	1	0	4.4	0.7
DAI	115	0	6	1.1	0.4	102	0	5	0	4.3	1.2
DAL	2772	0	37	1.6	0.1	2583	0	40	0	7.0	0.1
DCS	56	4	4	1.5	-0.4	40	0	5	0	8.3	0.3
DHL	140	1	100	6.7	-6.5	76	0	36	0	14.7	3.4
DLH	1072	0	10	1.6	0.1	1000	0	11	0	6.7	0.6
DRD	294	1	4	2.0	-0.1	292	0	7	0	11.1	-0.1
EDW	68	1	7	1.4	-0.2	57	0	9	0	8.1	-0.8
EEZ	269	0	7	1.8	0.2	268	0	5	0	5.9	0.8
EIA	360	1	18	1.7	0.2	338	0	100	0	16.8	2.6
ELY	43	0	7	2.7	-0.3	22	0	0	0	5.6	1.2

ETH	22	0	0	0.9	-0.4	23	4	4	0	4.1	0.8
EVA	168	1	10	1.6	-0.1	178	0	12	0	9.3	-0.3

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FCA	163	3	9	1.8	0.0	137	0	7	0	12.5	1.2
FDX	1771	1	51	1.4	0.1	1614	0	52	0	7.4	0.2
FGI	31	0	0	0.8	-0.3	27	0	0	0	3.4	-0.2
FGS	30	0	0	0.6	0.0	25	0	0	0	3.3	1.1
FIN	326	1	6	1.5	0.3	242	0	5	0	6.6	0.1
FJI	757	1	28	1.8	0.9	744	0	26	0	6.6	0.6
FOM	952	0	26	1.2	0.2	945	0	26	0	6.2	0.6
FWI	630	1	3	1.7	-0.3	627	1	4	0	7.8	0.4
GCO	137	1	11	1.7	0.0	134	0	28	0	14.1	3.6
GES	35	3	6	2.1	-0.5	23	0	0	0	5.0	1.2
GRL	83	0	1	1.5	0.4	73	0	4	0	6.5	0.9
GTI	236	3	20	2.5	1.1	222	0	15	0	7.2	1.3
HAL	4000	0	37	1.9	0.4	3931	0	38	0	7.9	-0.2
HBI	26	0	0	1.3	-0.1	22	0	0	0	5.7	1.5
HMY	77	0	47	2.1	0.1	81	2	48	0	10.8	-0.9
HXL	239	0	5	1.3	-0.2	204	0	8	0	9.1	0.0
IBE	3559	1	3	1.6	0.2	3556	0	5	0	8.7	0.2
ICE	909	0	3	1.3	0.2	509	0	3	0	5.6	0.4
IWD	437	0	4	1.6	-0.1	436	0	5	0	8.4	0.4
JAL	2203	0	3	1.7	0.2	2202	0	5	0	8.1	0.1
JAZ	1031	2	6	1.6	0.4	1026	1	8	0	9.1	-0.1
JBU	24	4	4	1.0	-0.3	25	0	4	0	7.6	-0.7
KAL	1299	1	10	1.7	0.0	1294	0	9	0	7.2	0.0
KIW	26	0	12	1.4	-0.8	26	4	15	0	5.7	2.4
KLM	1269	1	7	1.5	0.0	1015	0	9	0	8.2	0.5
LAN	644	0	3	1.2	0.1	646	0	3	0	4.7	0.5
LAP	52	6	52	3.4	2.5	53	0	49	0	14.1	-2.5
LDI	381	1	3	1.6	0.1	312	0	3	0	7.4	0.3
LNE	131	2	8	2.0	0.2	130	1	5	0	9.1	-0.1
LOT	308	0	2	1.9	0.1	204	0	3	0	7.5	0.0
LTU	931	1	5	1.7	-0.1	779	0	4	0	7.8	1.2
LXR	33	0	0	1.8	0.0	31	3	13	0	17.4	-3.1
MAS	270	1	5	1.6	0.0	264	0	5	0	7.1	0.3
MMZ	131	1	21	3.6	1.7	129	2	10	0	10.1	-0.9
MON	38	0	0	1.0	-0.2	31	0	0	0	5.2	1.0
MPD	405	0	3	1.8	0.2	383	0	4	0	9.5	0.3
MPH	618	0	2	1.6	-0.8	493	0	4	0	7.9	-0.1
MXA	46	4	22	3.5	-0.7	45	2	100	0	17.0	3.0
MYT	205	1	3	1.6	-0.1	158	1	4	0	8.7	1.3
NAO	306	0	36	1.6	0.5	302	0	37	0	8.4	-1.2
NCA	1050	0	3	1.5	0.2	785	0	4	0	6.6	0.2
NOS	58	0	5	2.0	-0.3	49	0	6	0	7.8	0.7
NVR	82	0	2	1.4	-0.4	59	0	7	0	8.3	1.4
NWA	7699	0	16	1.7	0.0	7583	0	17	0	8.4	0.1
NZL	3496	0	10	1.0	0.1	3496	0	10	0	4.8	0.2
OAE	511	0	22	1.4	-0.4	383	0	58	0	8.1	1.5
OOM	138	0	4	1.7	-1.1	86	0	7	0	8.9	0.6
OYK	104	0	33	0.9	0.0	97	0	34	0	3.9	0.9
PAC	373	1	9	1.8	-0.2	348	1	8	0	7.8	0.2
PAL	1484	0	7	1.5	-0.2	1453	0	9	0	8.2	0.1
PAO	232	0	38	1.2	0.4	232	0	39	0	7.6	0.0
PBI	697	0	34	1.3	-0.2	696	0	34	0	5.5	0.7
PLM	292	1	7	2.0	0.7	255	0	7	0	9.6	1.2
PUA	33	9	58	3.6	1.4	29	0	59	0	13.2	-1.7

QFA	3889	0	35	1.2	0.2	3859	0	35	0	5.7	0.4
QQA	75	0	47	1.0	0.1	75	0	48	0	10.5	-1.4
RAM	322	1	6	2.0	0.5	237	0	100	0	8.5	-0.9
RCH	296	1	100	3.1	-0.8	229	1	100	0	12.8	1.6
RRR	63	3	11	2.1	-1.1	63	0	10	0	7.9	0.7

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RYN	170	0	41	1.5	-0.5	169	0	43	0	10.2	-1.2
RZO	693	0	3	1.8	-0.4	675	0	5	0	9.3	0.5
SAA	66	2	5	2.0	-0.1	65	0	5	0	10.9	-3.1
SAS	34	0	6	1.7	-0.1	20	0	5	0	9.3	-0.8
SER	73	1	15	1.4	0.2	64	0	16	0	4.0	0.8
SEU	224	0	4	1.9	0.2	208	0	5	0	8.5	0.3
SIA	457	0	5	1.3	0.4	456	0	5	0	4.9	0.3
SLM	118	3	7	1.2	0.2	117	0	6	0	8.5	0.2
SOO	32	0	13	2.0	0.6	46	0	15	0	9.3	1.5
SQC	51	0	0	1.1	0.2	51	0	2	0	8.5	-0.9
SSV	70	0	23	1.4	0.1	80	0	24	0	10.9	0.2
SVH	379	0	4	1.3	0.5	379	0	4	0	5.6	0.7
TAG	55	0	24	1.9	-0.7	51	0	25	0	6.2	0.4
TAM	27	4	41	3.3	1.4	27	0	37	0	14.1	-0.9
TAP	617	0	3	1.5	-0.5	564	1	4	0	8.5	0.3
TCX	87	1	7	1.6	-0.2	81	1	11	0	11.4	-0.2
THA	266	0	3	1.4	0.4	267	0	3	0	5.0	0.5
THT	962	0	23	1.0	0.5	961	0	22	0	5.3	1.0
TPA	34	3	9	1.9	-0.5	33	3	9	0	7.7	-0.5
TSC	67	4	9	1.9	-0.4	40	0	0	0	6.5	0.0
TSO	51	0	14	2.3	-0.7	52	0	8	0	5.3	0.1
TUB	120	0	3	1.8	0.0	72	0	6	0	10.1	0.6
UAE	693	0	6	1.4	0.5	692	0	6	0	4.6	0.5
UAL	305607	0	98	1.4	-0.1	305490	0	98	0	5.0	0.5
UPS	1762	0	57	1.7	0.2	1727	0	57	0	6.7	0.3
USA	160	1	4	1.5	0.0	133	0	5	0	7.0	0.2
VIR	195	1	4	1.6	-0.1	123	1	4	0	6.3	0.5
VPB	53	0	6	2.4	0.2	39	3	10	0	12.5	0.2
VRG	58	5	52	3.4	0.1	59	2	100	0	19.0	-0.3
VVJ	94	0	29	1.4	-0.7	99	0	29	0	7.4	0.0
VVR	42	0	36	2.6	0.9	40	0	35	0	8.0	3.0
WOA	392	1	13	1.7	0.3	365	0	14	0	8.6	0.4
XLA	202	0	3	1.3	-0.3	184	1	5	0	8.4	0.7
YSS	57	0	4	1.8	-0.1	54	0	4	0	6.2	0.3

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	40800	0	15	1.2	0.6	40821	0	15	0	5.0	0.5
B-	5990	0	76	1.6	0.5	5990	0	75	0	5.6	0.4
EU	257408	0	28	1.2	0.3	257406	0	27	0	4.4	0.4
HK	3781	0	27	1.4	0.1	3781	0	27	0	5.4	0.4
JP	57594	0	63	1.8	0.7	57594	0	63	0	5.5	0.0
LN	27	0	44	1.2	-0.1	29	0	45	0	11.8	4.0
MK	2460	8	86	4.6	3.3	2451	0	56	0	7.5	2.2
SA	5468	0	8	1.1	0.7	5468	0	11	0	4.6	0.2
TN	112	2	36	2.0	0.9	109	0	38	0	10.3	-0.4

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS

N	1487	1	22	1.7	0.3	1342	0	24	0	6.7	0.5

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
	1090874	0	67	1.5	0.3	1090858	0	66	0	5.4	0.5

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

	TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	727	1	45	1.2	-0.2	706	0	45	0	5.7	0.5
ACA	45	0	24	1.7	0.3	41	0	22	0	6.7	1.4
AFR	117	1	6	1.1	0.4	118	0	8	0	7.2	0.4
AMT	171	0	34	1.1	0.0	170	0	35	0	6.2	0.7
ANZ	233	1	15	1.2	-0.1	237	0	15	0	5.7	-0.7
AXF	49	0	61	2.8	0.0	48	0	60	0	8.0	1.4
CFC	63	2	5	1.8	0.1	58	0	3	0	5.7	-0.1
CKS	70	0	19	1.3	0.0	48	0	21	0	8.1	0.4
CNJ	451166	0	84	1.7	0.7	451166	0	84	0	5.6	0.0
CRL	61	2	7	1.5	-0.1	61	0	8	0	9.4	1.2
CWC	55	0	4	1.2	0.5	23	0	39	0	17.0	5.5
DAF	24	0	0	1.1	0.6	20	0	5	0	9.0	1.6
DAL	517	0	43	1.3	0.1	501	0	45	0	6.4	0.3
DLH	210	1	18	1.6	0.1	212	0	20	0	8.1	1.3
EIA	41	0	15	1.4	0.5	35	0	100	0	18.3	4.3
FDX	736	0	31	1.3	0.4	530	0	30	0	7.4	0.3
FIN	68	0	1	1.2	0.3	50	0	4	0	5.9	1.2
GCO	98	0	13	1.1	0.2	92	0	21	0	11.3	0.9
GTI	34	0	3	1.4	0.7	25	0	4	0	7.7	0.9
HAL	908	1	42	1.8	0.1	903	0	42	0	7.7	0.5
IBE	67	0	1	1.7	-0.1	67	0	6	0	10.9	1.4
ICE	52	0	0	1.3	-0.4	22	0	0	0	6.0	0.7
JAL	151	1	10	1.6	0.2	151	0	10	0	7.6	0.9
JAZ	73	1	11	1.7	0.0	71	0	10	0	5.4	-0.5
JKK	28	0	39	1.6	0.0	29	0	41	0	8.1	1.0
KAL	50	0	8	2.0	-0.7	49	0	8	0	9.4	-2.2
KIW	29	21	45	2.9	1.0	30	0	27	0	5.8	0.2
KLM	45	0	0	1.6	0.1	26	0	0	0	4.6	0.4
LAN	47	0	0	1.1	0.3	40	0	0	0	4.3	0.1
MAS	38	0	3	1.0	-0.2	38	0	3	0	4.5	0.8
MPH	94	1	4	1.8	-0.5	58	0	7	0	12.6	1.4
NCA	87	0	8	1.5	0.0	77	3	6	0	5.4	-0.4
NWA	659	2	21	1.6	0.0	639	0	21	0	8.2	0.3
NZL	18269	0	52	1.1	0.2	18269	0	53	0	4.2	0.2
OAE	80	0	15	1.4	-0.6	50	0	60	0	10.4	2.4
OCE	24	4	17	3.9	3.5	24	0	0	0	5.8	1.6
PAC	46	7	13	1.4	-0.3	29	0	7	0	7.3	-0.2
PAL	41	0	27	1.8	-0.8	40	0	25	0	7.3	1.1
QFA	240	0	35	1.1	0.1	239	0	35	0	6.0	-0.4
RCH	33	0	100	2.3	0.5	26	0	100	0	8.0	0.5
RRR	99	18	43	4.0	2.7	101	0	14	0	9.8	1.2
SIA	60	0	2	1.2	0.6	65	0	2	0	3.4	0.2
SVH	21798	0	61	1.6	0.9	21798	0	61	0	4.3	0.5
THA	23	0	0	1.0	0.8	24	0	0	0	4.5	1.7
THT	32	0	56	0.8	-0.2	32	0	56	0	7.7	-0.4
UAE	92	0	1	1.0	0.6	92	0	1	0	4.1	-0.1
UAL	249180	0	99	1.1	-0.2	248845	0	99	0	4.2	0.4
UPS	261	0	53	1.3	0.1	254	0	54	0	8.1	0.8
VVP	33	0	52	3.4	2.8	34	0	65	0	18.7	8.1
VVR	30	0	20	2.1	-0.4	28	0	25	0	8.8	-0.1
WOA	260	0	9	1.7	0.8	198	0	32	0	15.7	4.5

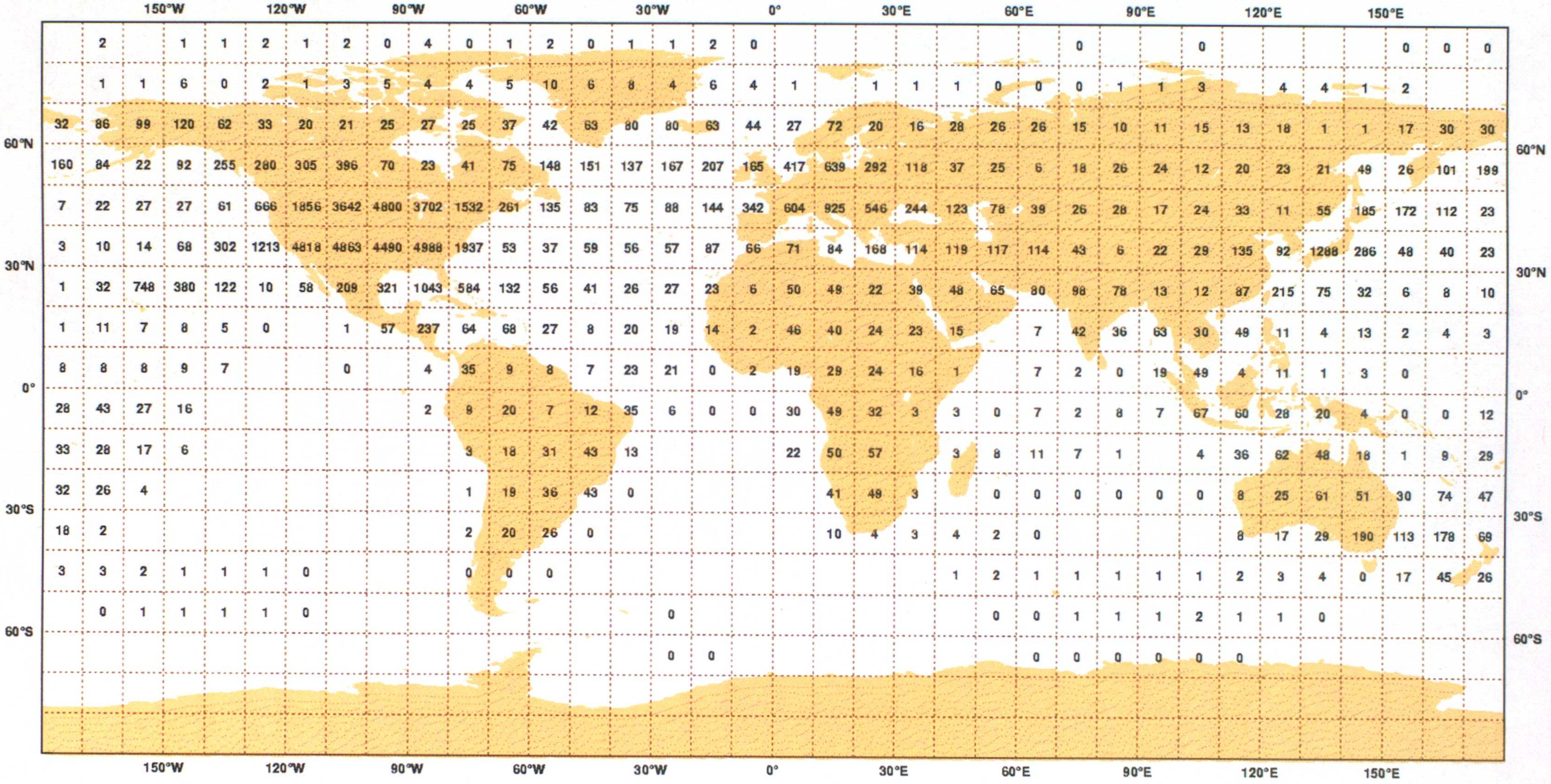
		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	47512	0	59	1.1	0.3	47529	0	59	0	3.9	0.4
B-	31163	0	76	1.3	0.5	31163	0	74	0	4.4	0.1

EU	684615	0	70	1.0	0.2	680165	0	69	0	3.6	0.1
HK	4075	0	81	1.4	0.7	4075	0	81	0	4.6	0.1

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
JP	263837	0	81	1.3	0.4	263837	0	81	0	4.6	0.4
MK	2835	2	90	3.9	2.5	2808	0	78	0	4.8	1.3
SA	4385	0	61	1.5	0.0	4385	0	62	0	4.6	0.0

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
U	1610911	0	78	1.2	0.3	1605438	0	78	0	4.3	0.3

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 61479



	2		1	1	2	1	2	0	4	0	1	2	0	1	1	2	0								0			0					0	0	0
	1	1	6	0	2	1	3	5	4	4	5	10	6	8	4	6	4	1		1	1	1	0	0	0	1	1	3		4	4	1	2		
32	86	99	120	62	33	20	21	25	27	25	37	42	63	80	80	63	44	27	72	20	16	28	26	26	15	10	11	15	13	18	1	1	17	30	30
160	84	22	92	255	280	305	396	70	23	41	75	148	151	137	167	207	165	417	639	292	118	37	25	6	18	26	24	12	20	23	21	49	26	101	199
7	22	27	27	61	666	1856	3642	4800	3702	1532	261	135	83	75	88	144	342	604	925	546	244	123	78	39	26	28	17	24	33	11	55	185	172	112	23
3	10	14	68	302	1213	4818	4863	4490	4988	1937	53	37	59	56	57	87	66	71	84	168	114	119	117	114	43	6	22	29	135	92	1288	286	48	40	23
1	32	748	380	122	10	58	209	321	1043	584	132	56	41	26	27	23	6	50	49	22	39	48	65	80	98	78	13	12	87	215	75	32	6	8	10
1	11	7	8	5	0		1	57	237	64	68	27	8	20	19	14	2	46	40	24	23	15		7	42	36	63	30	49	11	4	13	2	4	3
8	8	8	9	7			0		4	35	9	8	7	23	21	0	2	19	29	24	16	1		7	2	0	19	49	4	11	1	3	0		
28	43	27	16						2	9	20	7	12	35	6	0	0	30	49	32	3	3	0	7	2	8	7	67	60	28	20	4	0	0	12
33	28	17	6							3	18	31	43	13				22	50	57		3	8	11	7	1		4	36	62	48	18	1	9	29
32	26	4								1	19	36	43	0					41	49	3		0	0	0	0	0	0	8	25	61	51	30	74	47
18	2									2	20	26	0						10	4	3	4	2	0					8	17	29	190	113	178	69
3	3	2	1	1	1	0				0	0	0										1	2	1	1	1	1	1	2	3	4	0	17	45	26
	0	1	1	1	1	0									0								0	0	1	1	1	2	1	1	0				
															0	0								0	0	0	0	0	0						

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 109226

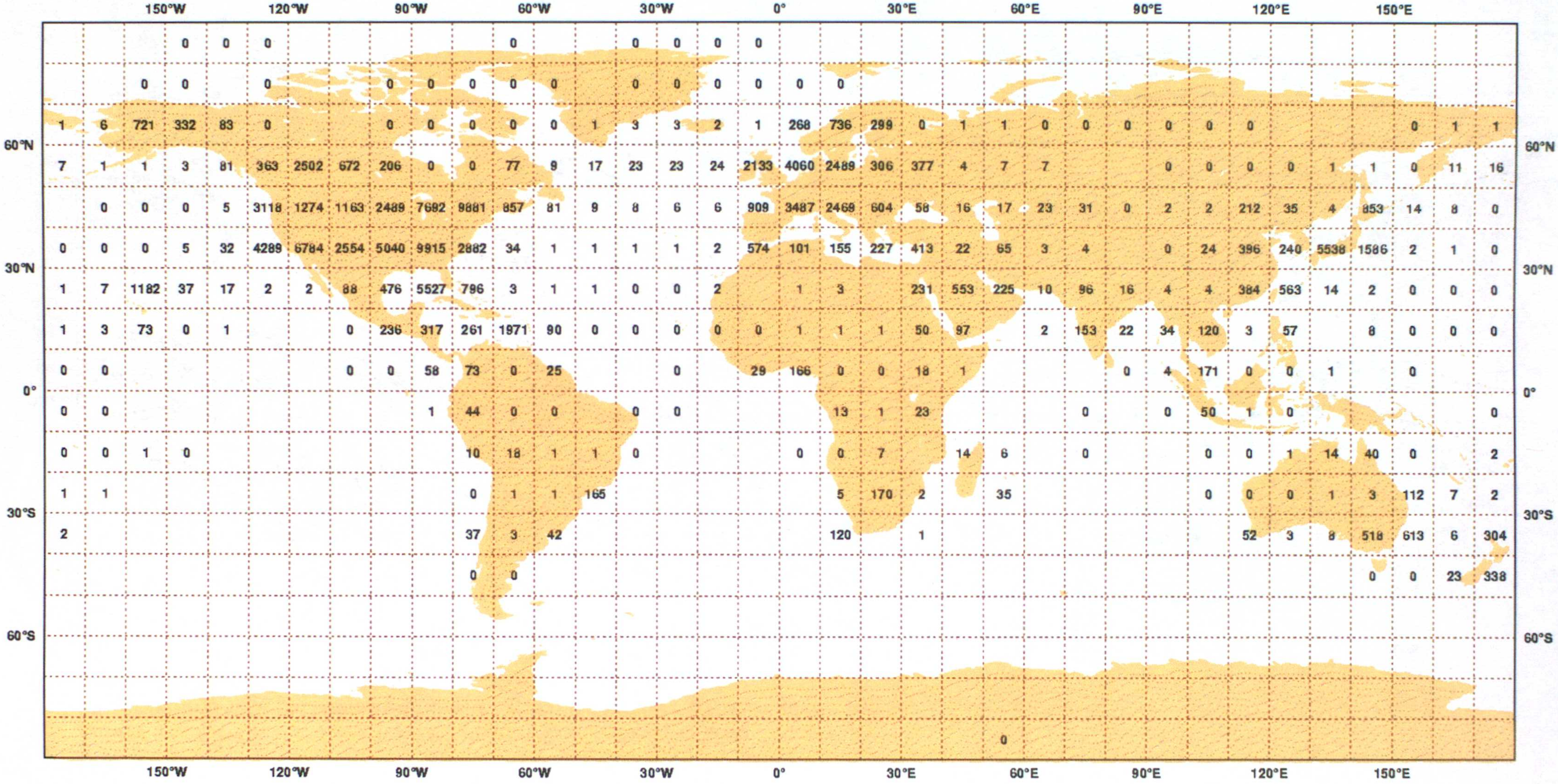

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0
1 6 721 332 83 0 0 0 0 0 0 1 3 3 2 1 268 736 299 0 1 1 0 0 0 0 0 0 0 1 1
7 1 1 3 81 363 2502 672 206 0 0 77 9 17 23 23 24 2133 4060 2489 306 377 4 7 7 0 0 0 0 1 1 0 11 16
0 0 0 5 3118 1274 1163 2489 7682 9881 857 81 9 8 6 6 909 3487 2469 604 58 16 17 23 31 0 2 2 212 35 4 853 14 8 0
0 0 0 5 32 4289 6784 2554 5040 9915 2882 34 1 1 1 1 2 574 101 155 227 413 22 65 3 4 0 24 396 240 5538 1586 2 1 0
1 7 1182 37 17 2 2 88 476 5527 796 3 1 1 0 0 2 1 3 231 553 225 10 96 16 4 4 384 563 14 2 0 0 0
1 3 73 0 1 0 236 317 261 1971 90 0 0 0 0 0 1 1 1 50 97 2 153 22 34 120 3 57 8 0 0 0
0 0 0 0 58 73 0 25 0 29 166 0 0 18 1 0 4 171 0 0 1 0
0 0 1 44 0 0 0 0 13 1 23 0 0 50 1 0 0
0 0 1 0 10 18 1 1 0 0 0 7 14 6 0 0 0 1 14 40 0 2
1 1 0 1 1 165 5 170 2 35 0 0 0 1 3 112 7 2
2 37 3 42 120 1 52 3 8 518 613 6 304
0 0 0 0 23 338
0

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

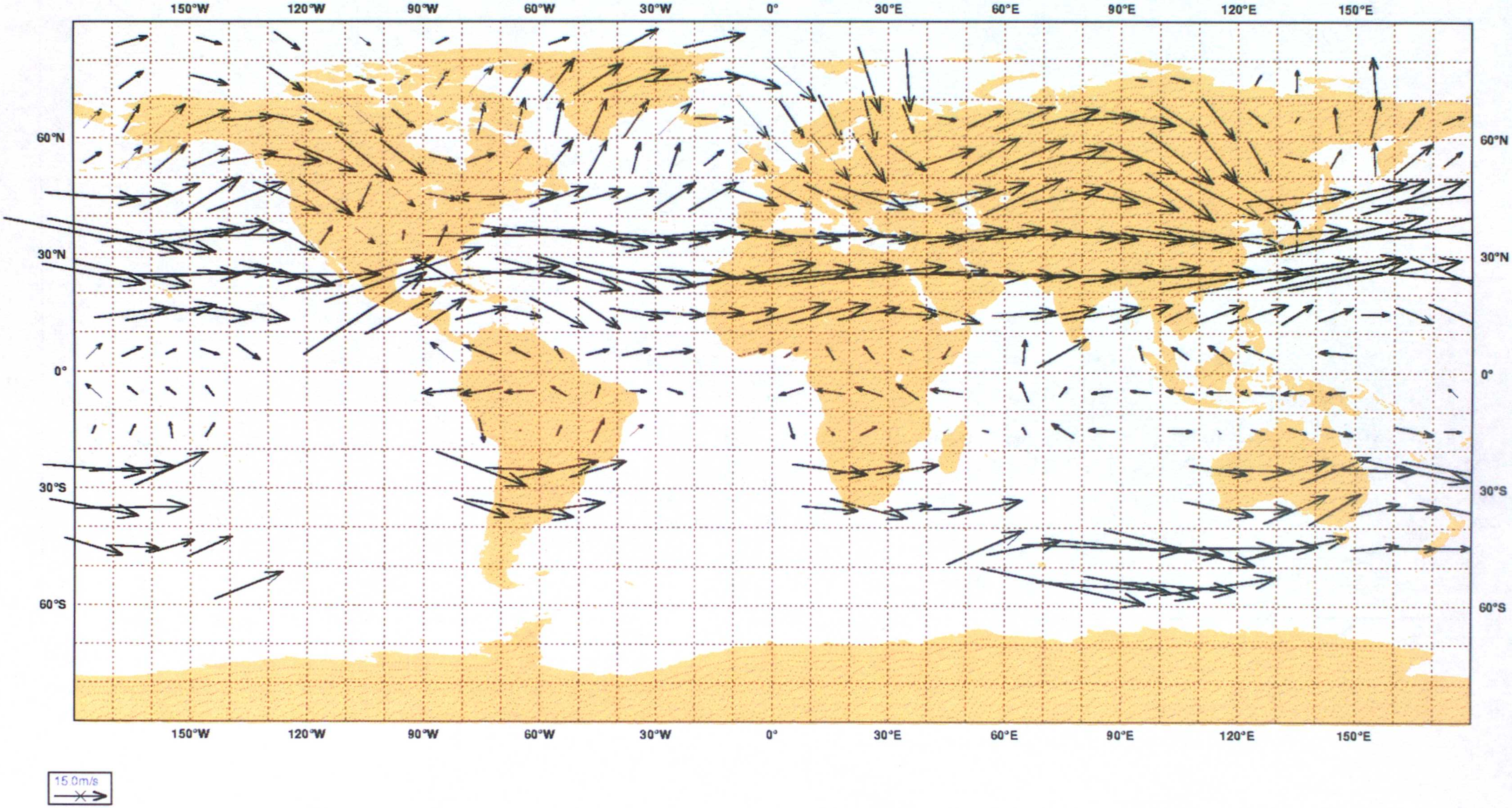

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

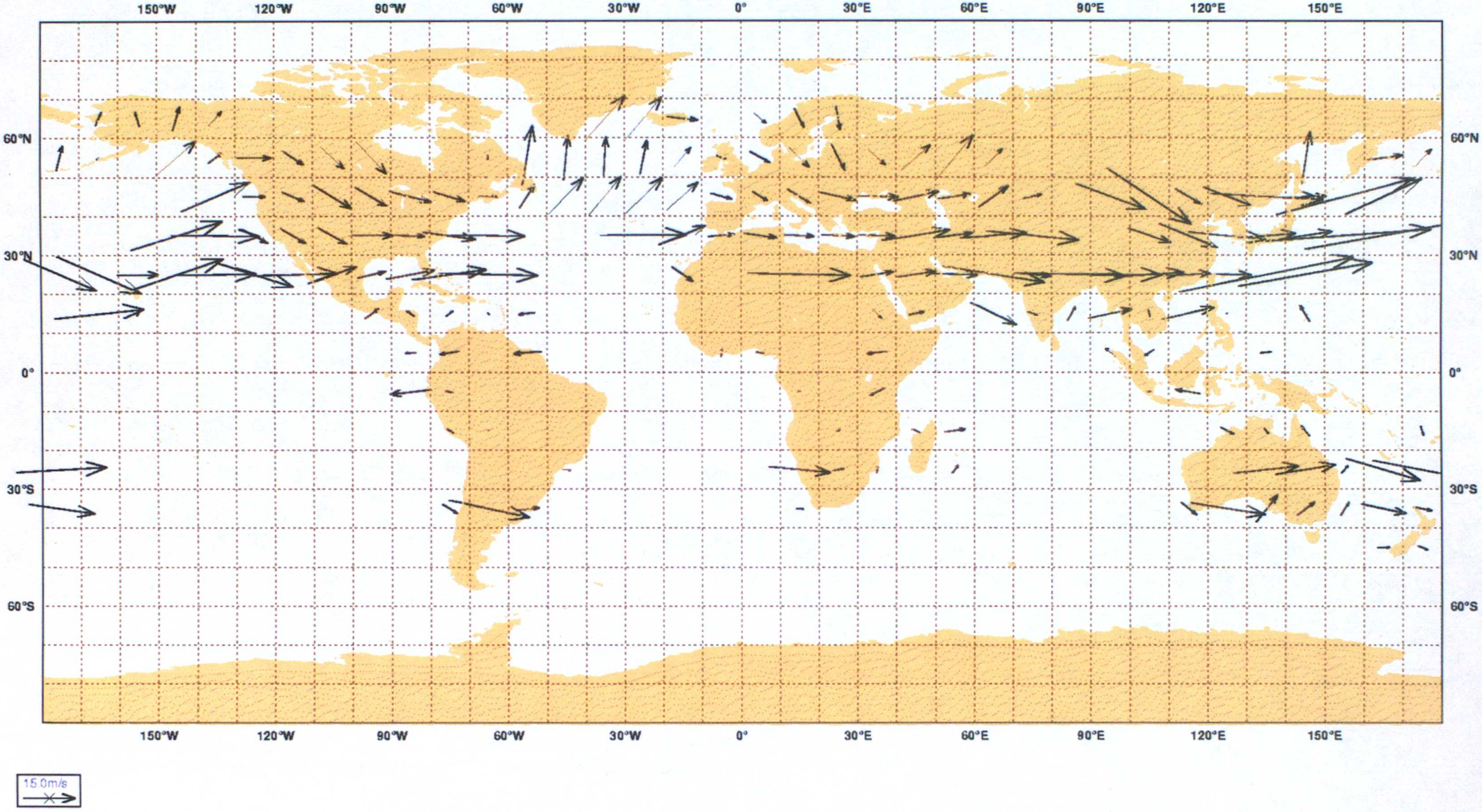

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

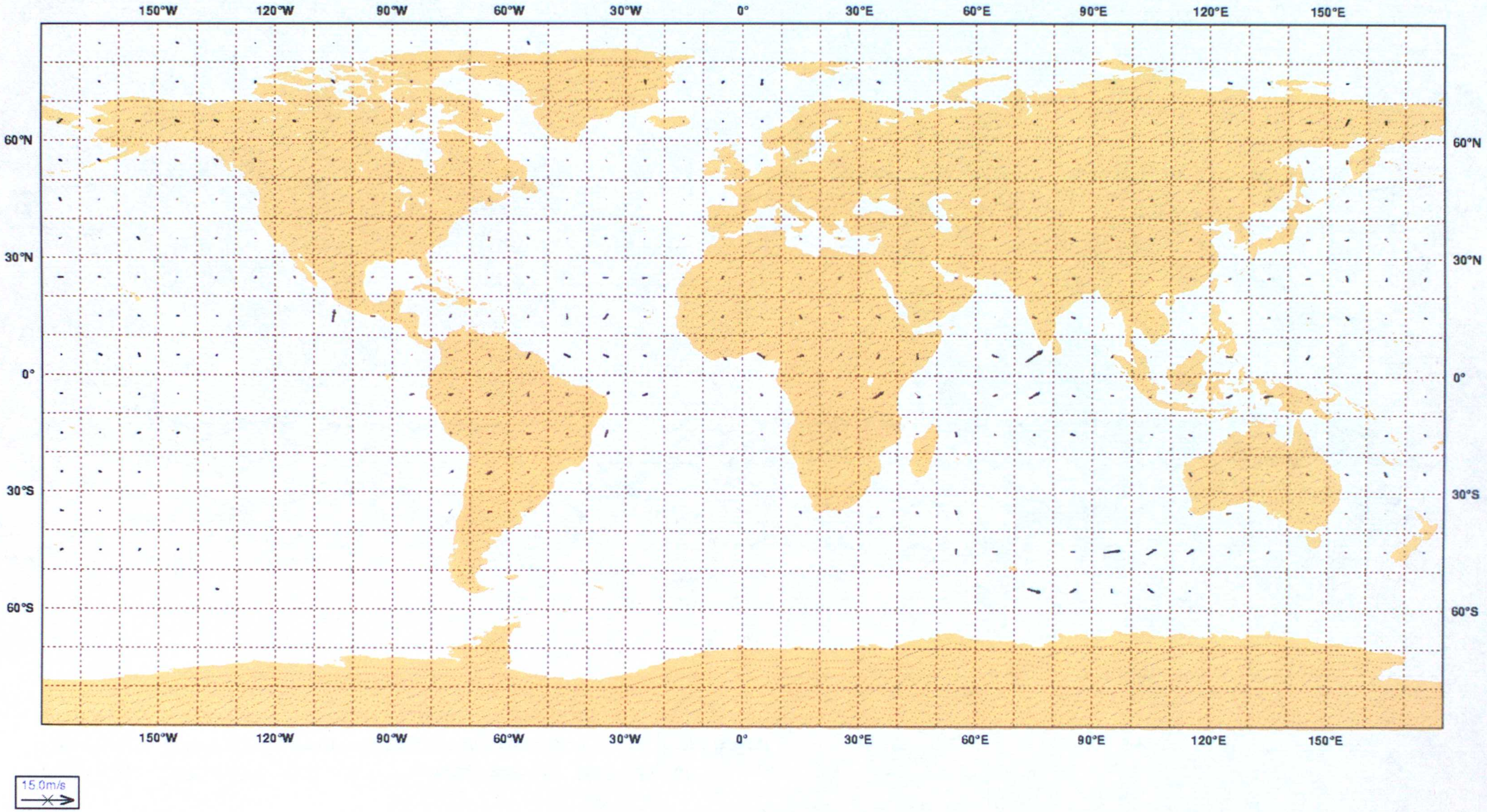

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

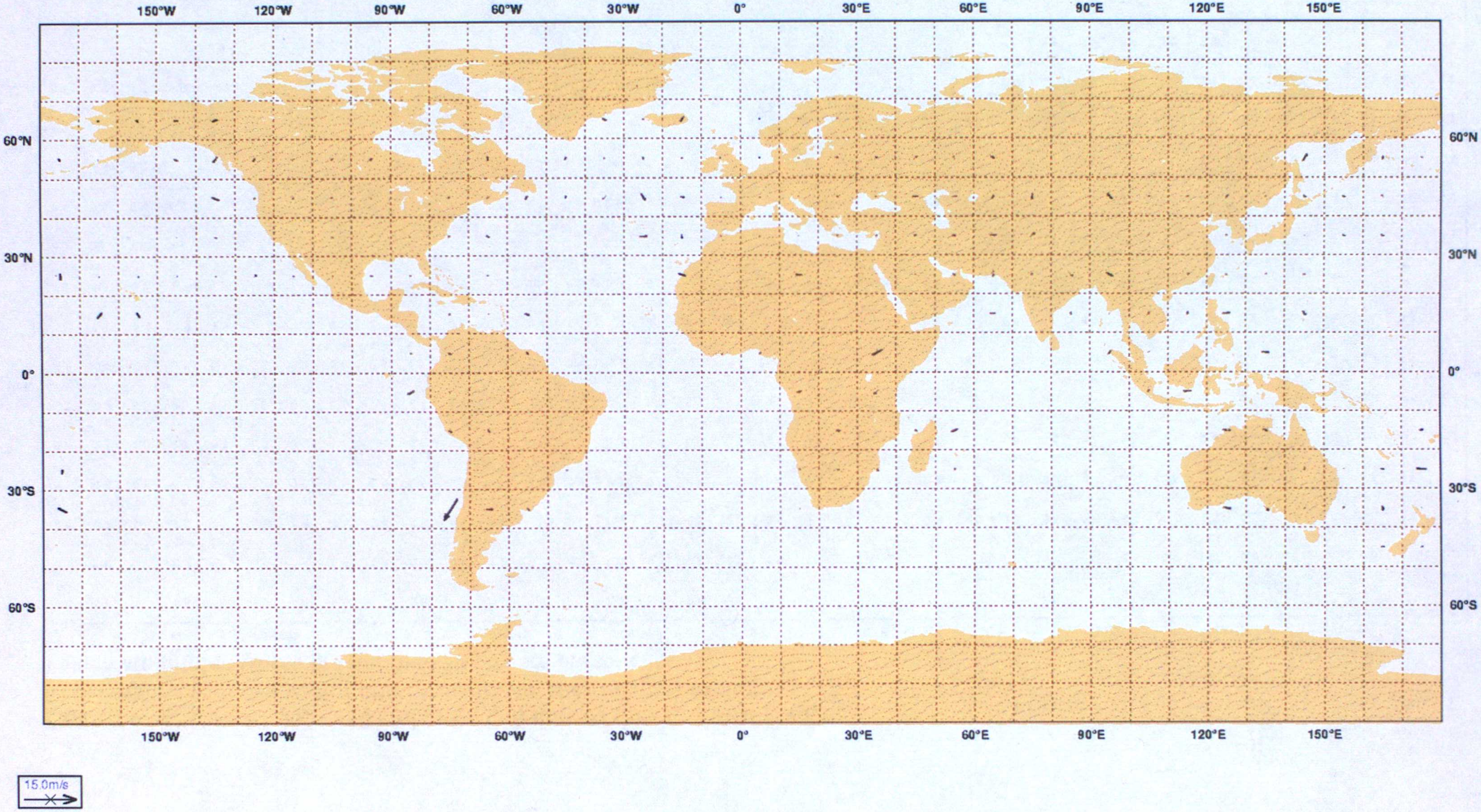

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

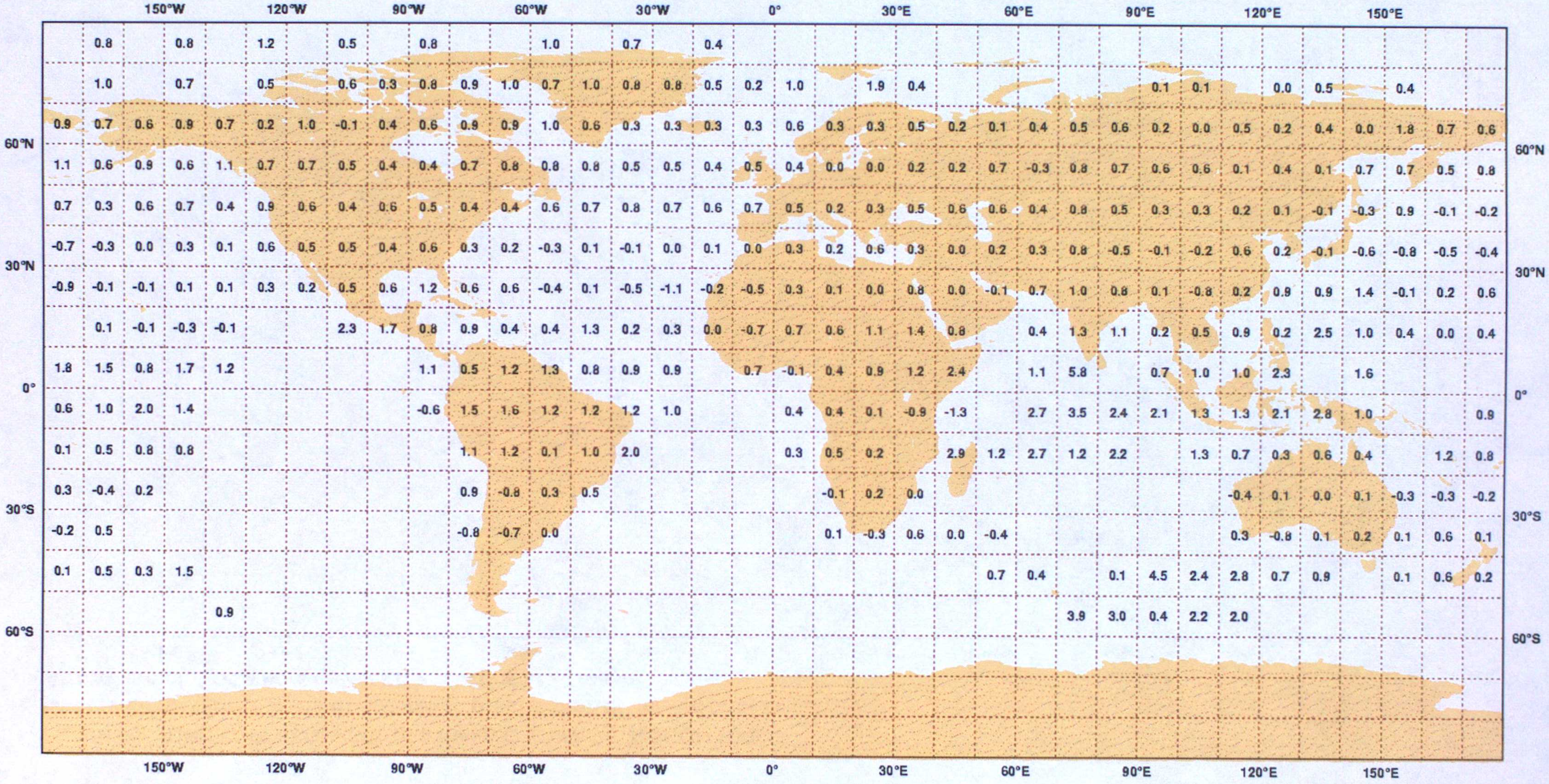

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
0.8 0.8 1.2 0.5 0.8 1.0 0.7 0.4
1.0 0.7 0.5 0.6 0.3 0.8 0.9 1.0 0.7 1.0 0.8 0.8 0.5 0.2 1.0 1.9 0.4 0.1 0.1 0.0 0.5 0.4
0.9 0.7 0.6 0.9 0.7 0.2 1.0 -0.1 0.4 0.6 0.9 0.9 1.0 0.6 0.3 0.3 0.3 0.3 0.6 0.3 0.3 0.5 0.2 0.1 0.4 0.5 0.6 0.2 0.0 0.5 0.2 0.4 0.0 1.8 0.7 0.6
1.1 0.6 0.9 0.6 1.1 0.7 0.7 0.5 0.4 0.4 0.7 0.8 0.8 0.8 0.5 0.5 0.4 0.5 0.4 0.0 0.0 0.2 0.2 0.7 -0.3 0.8 0.7 0.6 0.6 0.1 0.4 0.1 0.7 0.7 0.5 0.8
0.7 0.3 0.6 0.7 0.4 0.9 0.6 0.4 0.6 0.5 0.4 0.4 0.6 0.7 0.8 0.7 0.6 0.7 0.5 0.2 0.3 0.5 0.6 0.6 0.4 0.8 0.5 0.3 0.3 0.2 0.1 -0.1 -0.3 0.9 -0.1 -0.2
-0.7 -0.3 0.0 0.3 0.1 0.6 0.5 0.5 0.4 0.6 0.3 0.2 -0.3 0.1 -0.1 0.0 0.1 0.0 0.3 0.2 0.6 0.3 0.0 0.2 0.3 0.8 -0.5 -0.1 -0.2 0.6 0.2 -0.1 -0.6 -0.8 -0.5 -0.4
-0.9 -0.1 -0.1 0.1 0.1 0.3 0.2 0.5 0.6 1.2 0.6 0.6 -0.4 0.1 -0.5 -1.1 -0.2 -0.5 0.3 0.1 0.0 0.8 0.0 -0.1 0.7 1.0 0.8 0.1 -0.8 0.2 0.9 0.9 1.4 -0.1 0.2 0.6
0.1 -0.1 -0.3 -0.1 2.3 1.7 0.8 0.9 0.4 0.4 1.3 0.2 0.3 0.0 -0.7 0.7 0.6 1.1 1.4 0.8 0.4 1.3 1.1 0.2 0.5 0.9 0.2 2.5 1.0 0.4 0.0 0.4
1.8 1.5 0.8 1.7 1.2 1.1 0.5 1.2 1.3 0.8 0.9 0.9 0.7 -0.1 0.4 0.9 1.2 2.4 1.1 5.8 0.7 1.0 1.0 2.3 1.6
0.6 1.0 2.0 1.4 -0.6 1.5 1.6 1.2 1.2 1.2 1.0 0.4 0.4 0.1 -0.9 -1.3 2.7 3.5 2.4 2.1 1.3 1.3 2.1 2.8 1.0 0.9
0.1 0.5 0.8 0.8 1.1 1.2 0.1 1.0 2.0 0.3 0.5 0.2 2.9 1.2 2.7 1.2 2.2 1.3 0.7 0.3 0.6 0.4 1.2 0.8
0.3 -0.4 0.2 0.9 -0.8 0.3 0.5 -0.1 0.2 0.0 -0.4 0.1 0.0 0.1 -0.3 -0.3 -0.2
-0.2 0.5 -0.8 -0.7 0.0 0.1 -0.3 0.6 0.0 -0.4 0.3 -0.8 0.1 0.2 0.1 0.6 0.1
0.1 0.5 0.3 1.5 0.7 0.4 0.1 4.5 2.4 2.8 0.7 0.9 0.1 0.6 0.2
0.9 3.9 3.0 0.4 2.2 2.0

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

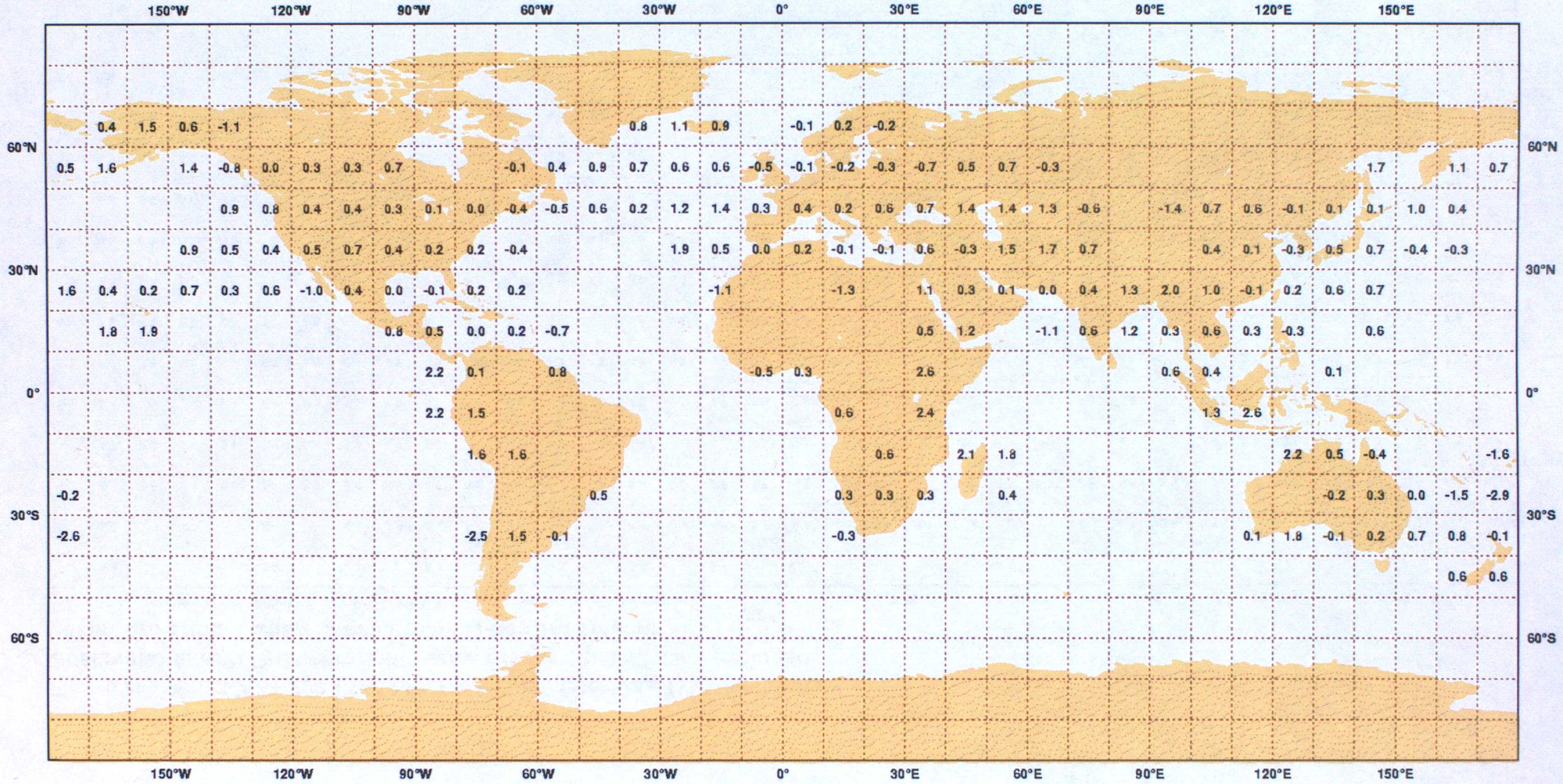

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
0.4 1.5 0.6 -1.1 0.8 1.1 0.9 -0.1 0.2 -0.2
0.5 1.6 1.4 -0.8 0.0 0.3 0.3 0.7 -0.1 0.4 0.9 0.7 0.6 0.6 -0.5 -0.1 -0.2 -0.3 -0.7 0.5 0.7 -0.3 1.7 1.1 0.7
0.9 0.8 0.4 0.4 0.3 0.1 0.0 -0.4 -0.5 0.6 0.2 1.2 1.4 0.3 0.4 0.2 0.6 0.7 1.4 1.4 1.3 -0.6 -1.4 0.7 0.6 -0.1 0.1 0.1 1.0 0.4
0.9 0.5 0.4 0.5 0.7 0.4 0.2 0.2 -0.4 1.9 0.5 0.0 0.2 -0.1 -0.1 0.6 -0.3 1.5 1.7 0.7 0.4 0.1 -0.3 0.5 0.7 -0.4 -0.3
1.6 0.4 0.2 0.7 0.3 0.6 -1.0 0.4 0.0 -0.1 0.2 0.2 -1.1 -1.3 1.1 0.3 0.1 0.0 0.4 1.3 2.0 1.0 -0.1 0.2 0.6 0.7
1.8 1.9 0.8 0.5 0.0 0.2 -0.7 0.5 1.2 -1.1 0.6 1.2 0.3 0.6 0.3 -0.3 0.6
2.2 0.1 0.8 -0.5 0.3 2.6 0.6 0.4 0.1
2.2 1.5 0.6 2.4 1.3 2.6
1.6 1.6 0.6 2.1 1.8 2.2 0.5 -0.4 -1.6
-0.2 0.5 0.3 0.3 0.3 0.4 -0.2 0.3 0.0 -1.5 -2.9
-2.6 -2.5 1.5 -0.1 -0.3 0.1 1.8 -0.1 0.2 0.7 0.8 -0.1
0.6 0.6
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). MARCH 2005

Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

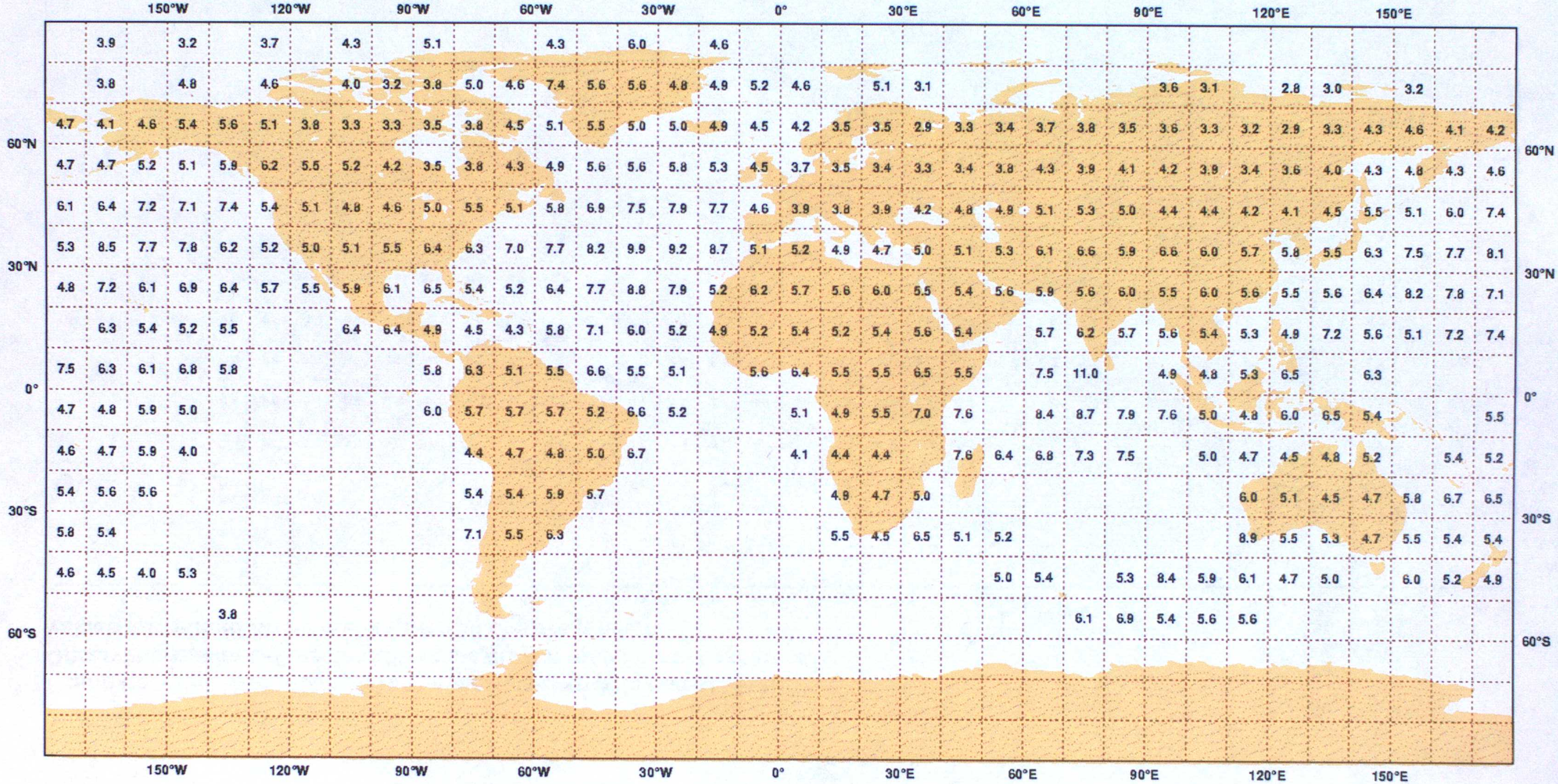

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
3.9 3.2 3.7 4.3 5.1 4.3 6.0 4.6
3.8 4.8 4.6 4.0 3.2 3.8 5.0 4.6 7.4 5.6 5.6 4.8 4.9 5.2 4.6 5.1 3.1 3.6 3.1 2.8 3.0 3.2
4.7 4.1 4.6 5.4 5.6 5.1 3.8 3.3 3.3 3.5 3.8 4.5 5.1 5.5 5.0 5.0 4.9 4.5 4.2 3.5 3.5 2.9 3.3 3.4 3.7 3.8 3.5 3.6 3.3 3.2 2.9 3.3 4.3 4.6 4.1 4.2
4.7 4.7 5.2 5.1 5.9 6.2 5.5 5.2 4.2 3.5 3.8 4.3 4.9 5.6 5.6 5.8 5.3 4.5 3.7 3.5 3.4 3.3 3.4 3.8 4.3 3.9 4.1 4.2 3.9 3.4 3.6 4.0 4.3 4.8 4.3 4.6
6.1 6.4 7.2 7.1 7.4 5.4 5.1 4.8 4.6 5.0 5.5 5.1 5.8 6.9 7.5 7.9 7.7 4.6 3.9 3.8 3.9 4.2 4.8 4.9 5.1 5.3 5.0 4.4 4.4 4.2 4.1 4.5 5.5 5.1 6.0 7.4
5.3 8.5 7.7 7.8 6.2 5.2 5.0 5.1 5.5 6.4 6.3 7.0 7.7 8.2 9.9 9.2 8.7 5.1 5.2 4.9 4.7 5.0 5.1 5.3 6.1 6.6 5.9 6.6 6.0 5.7 5.8 5.5 6.3 7.5 7.7 8.1
4.8 7.2 6.1 6.9 6.4 5.7 5.5 5.9 6.1 6.5 5.4 5.2 6.4 7.7 8.8 7.9 5.2 6.2 5.7 5.6 6.0 5.5 5.4 5.6 5.9 5.6 6.0 5.5 6.0 5.6 5.5 5.6 6.4 8.2 7.8 7.1
6.3 5.4 5.2 5.5 6.4 6.4 4.9 4.5 4.3 5.8 7.1 6.0 5.2 4.9 5.2 5.4 5.2 5.4 5.6 5.4 5.7 6.2 5.7 5.6 5.4 5.3 4.9 7.2 5.6 5.1 7.2 7.4
7.5 6.3 6.1 6.8 5.8 5.8 6.3 5.1 5.5 6.6 5.5 5.1 5.6 6.4 5.5 5.5 6.5 5.5 7.5 11.0 4.9 4.8 5.3 6.5 6.3
4.7 4.8 5.9 5.0 6.0 5.7 5.7 5.7 5.2 6.6 5.2 5.1 4.9 5.5 7.0 7.6 8.4 8.7 7.9 7.6 5.0 4.8 6.0 6.5 5.4 5.5
4.6 4.7 5.9 4.0 4.4 4.7 4.8 5.0 6.7 4.1 4.4 4.4 7.6 6.4 6.8 7.3 7.5 5.0 4.7 4.5 4.8 5.2 5.4 5.2
5.4 5.6 5.6 5.4 5.4 5.9 5.7 4.9 4.7 5.0 6.0 5.1 4.5 4.7 5.8 6.7 6.5
5.8 5.4 7.1 5.5 6.3 5.5 4.5 6.5 5.1 5.2 8.9 5.5 5.3 4.7 5.5 5.4 5.4
4.6 4.5 4.0 5.3 5.0 5.4 5.3 8.4 5.9 6.1 4.7 5.0 6.0 5.2 4.9
3.8 6.1 6.9 5.4 5.6 5.6

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). MARCH 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

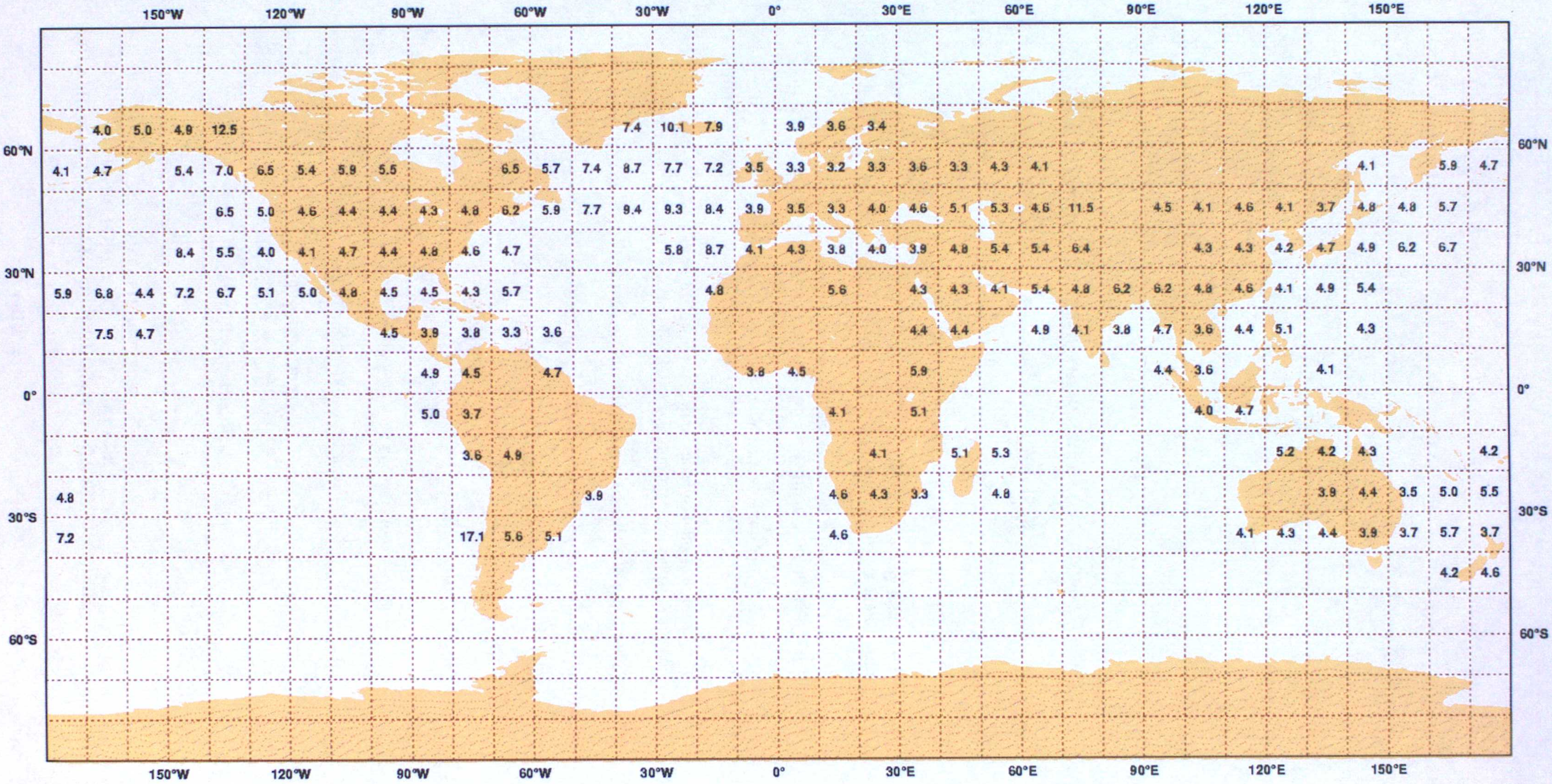

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
4.0 5.0 4.9 12.5 7.4 10.1 7.9 3.9 3.6 3.4
4.1 4.7 5.4 7.0 6.5 5.4 5.9 5.5 6.5 5.7 7.4 8.7 7.7 7.2 3.5 3.3 3.2 3.3 3.6 3.3 4.3 4.1 4.1 5.9 4.7
6.5 5.0 4.6 4.4 4.4 4.3 4.8 6.2 5.9 7.7 9.4 9.3 8.4 3.9 3.5 3.3 4.0 4.6 5.1 5.3 4.6 11.5 4.5 4.1 4.6 4.1 3.7 4.8 4.8 5.7
8.4 5.5 4.0 4.1 4.7 4.4 4.8 4.6 4.7 5.8 8.7 4.1 4.3 3.8 4.0 3.9 4.8 5.4 5.4 6.4 4.3 4.3 4.2 4.7 4.9 6.2 6.7
5.9 6.8 4.4 7.2 6.7 5.1 5.0 4.8 4.5 4.5 4.3 5.7 4.8 5.6 4.3 4.3 4.1 5.4 4.8 6.2 6.2 4.8 4.6 4.1 4.9 5.4
7.5 4.7 4.5 3.9 3.8 3.3 3.6 4.4 4.4 4.9 4.1 3.8 4.7 3.6 4.4 5.1 4.3
4.9 4.5 4.7 3.8 4.5 5.9 4.4 3.6 4.1
5.0 3.7 4.1 5.1 4.0 4.7
3.6 4.9 4.1 5.1 5.3 5.2 4.2 4.3 4.2
4.8 3.9 4.6 4.3 3.3 4.8 3.9 4.4 3.5 5.0 5.5
7.2 17.1 5.6 5.1 4.6 4.1 4.3 4.4 3.9 3.7 5.7 3.7
4.2 4.6
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Mar 2005

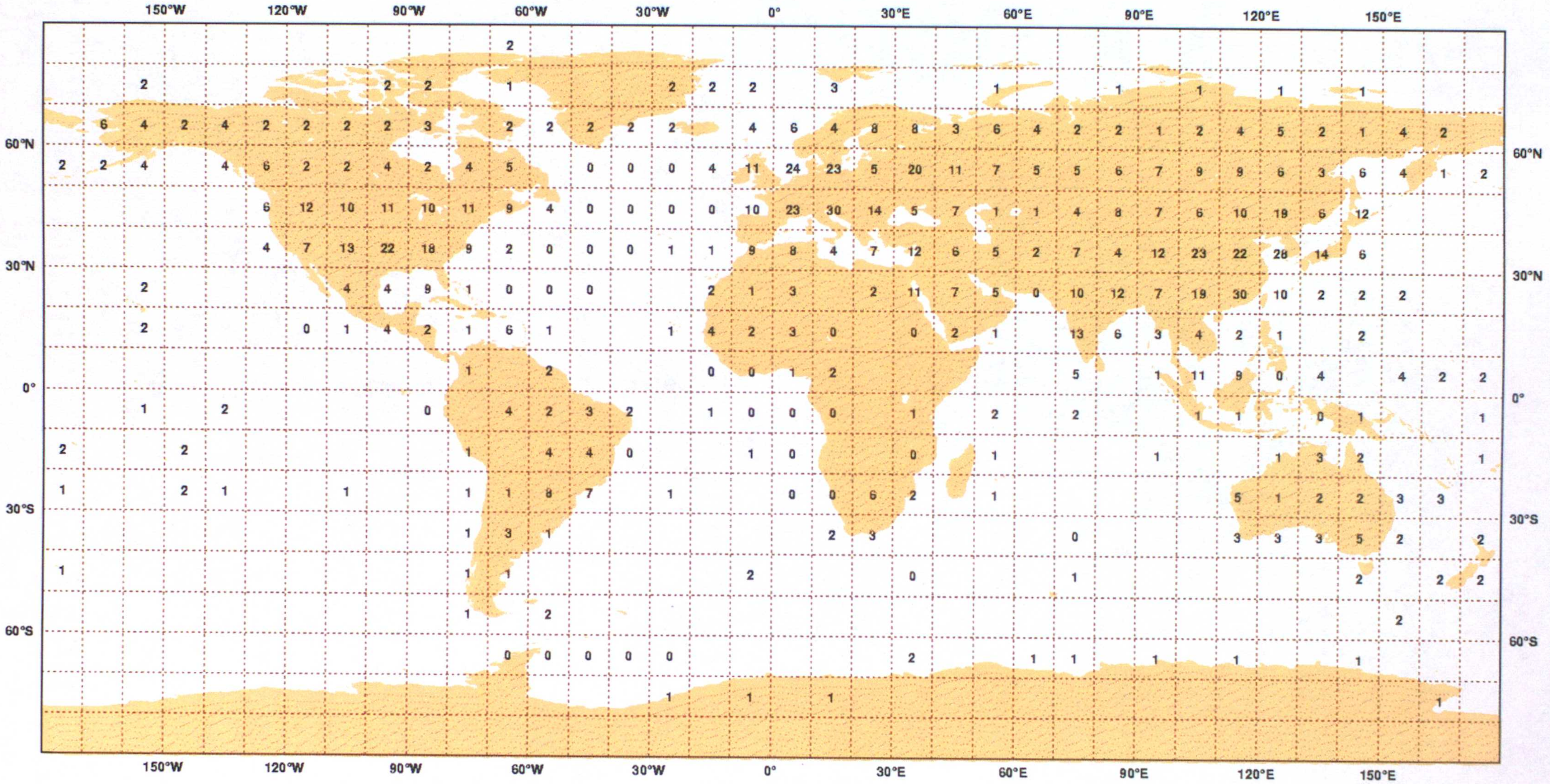
Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
28275	12	Z	250	58/ 68	19	2	46.7	75.9	89.1	5
31168	00	Z	1000	56/ 138	25	4	27.4	-35.9	45.2	5
42027	00	Z	200	34/ 75	15	3	62.2	-95.1	113.6	6
42101	00	Z	150	30/ 76	25	1	102.2	-114.6	153.6	11
42182	00	Z	1000	29/ 77	2	24	7.5	-84.5	84.8	6
42182	12	Z	1000	29/ 77	1	29	0.0	-96.0	96.0	4
42314	00	Z	200	27/ 95	17	0	53.7	-110.8	123.2	5
42314	12	Z	200	27/ 95	19	0	63.3	-103.7	121.5	5
42339	00	Z	250	26/ 73	22	3	43.5	-126.1	133.4	7
42361	00	Z	1000	26/ 78	7	18	5.8	-92.3	92.5	6
42361	12	Z	1000	26/ 78	2	26	0.5	-89.5	89.5	9
42369	00	Z	1000	27/ 81	27	1	28.5	-51.9	59.2	10
42369	12	Z	1000	27/ 81	22	3	28.4	-55.0	61.9	10
42379	00	Z	250	27/ 83	20	1	73.5	-77.2	106.6	7
42410	00	Z	1000	26/ 92	2	25	1.0	-93.0	93.0	8
42410	12	Z	100	26/ 92	9	1	65.9	-138.8	153.6	7
42492	12	Z	100	26/ 85	15	0	74.5	-144.0	162.1	8
42647	00	Z	200	23/ 73	18	1	88.8	-60.1	107.3	4
42667	00	Z	200	23/ 77	17	0	93.6	-71.1	117.5	4
42701	00	Z	50	23/ 85	18	0	134.0	91.4	162.2	7
42809	00	Z	200	23/ 88	19	1	49.8	-107.4	118.4	8
42809	12	Z	100	23/ 88	15	0	107.4	-107.9	152.2	8
42867	00	Z	200	21/ 79	26	2	58.1	-116.6	130.3	8
42867	12	Z	30	21/ 79	10	2	82.6	273.8	286.0	9
42971	00	Z	200	20/ 86	26	0	58.8	-86.3	104.5	9
43003	00	Z	1000	19/ 73	28	0	20.9	-56.3	60.1	13
43003	12	Z	1000	19/ 73	29	0	21.6	-66.3	69.7	6
43128	00	Z	150	17/ 78	25	0	63.3	-102.4	120.4	5
43128	12	Z	50	17/ 78	20	2	119.2	202.4	234.9	11
43150	00	Z	1000	18/ 83	19	11	17.9	-72.5	74.6	5
43150	12	Z	1000	18/ 83	12	17	14.8	-68.5	70.1	7
43185	00	Z	100	16/ 81	13	0	113.7	-131.5	173.8	4
43185	12	Z	300	16/ 81	16	0	79.5	19.1	81.8	7
43192	00	Z	1000	15/ 74	10	19	5.8	-82.1	82.3	8
43192	12	Z	1000	15/ 74	9	21	5.4	-88.3	88.5	6
43285	00	Z	1000	13/ 75	8	20	2.3	-93.1	93.2	6
43295	00	Z	100	13/ 78	12	0	80.8	-124.4	148.4	5
43295	12	Z	50	13/ 78	11	0	100.8	214.1	236.6	9
43333	00	Z	100	12/ 93	18	0	112.5	-85.6	141.3	4
43346	00	Z	100	11/ 80	12	1	104.2	-135.9	171.2	5
43346	12	Z	250	11/ 80	17	0	79.0	5.2	79.1	7
43353	00	Z	1000	10/ 76	28	1	17.3	-70.4	72.5	7
43353	12	Z	1000	10/ 76	17	11	12.9	-80.3	81.3	8
43369	00	Z	100	8/ 73	13	1	146.4	-0.2	146.4	8
43371	00	Z	150	8/ 77	20	2	89.0	-165.5	187.9	10
43371	12	Z	50	8/ 77	14	0	171.3	198.4	262.1	6
76723	12	Z	850	19/-111	14	0	4.7	44.1	44.3	4
91366	00	Z	50	9/ 168	17	5	115.8	191.6	223.9	10
91366	12	Z	200	9/ 168	24	5	66.8	-164.9	177.9	10
96935	00	Z	1000	-7/ 113	5	7	11.2	-74.2	75.0	5

Figure 8. TEMP 500 hPa geopotential mean daily count. MARCH 2005
All hours
Global average number of observations in 24 hours = 1216


150°W
120°W
90°W
60°W
30°W
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60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2
2 2 2 1 2 2 2 3 1 1 1 1 1
6 4 2 4 2 2 2 2 3 2 2 2 2 2 4 6 4 8 8 3 6 4 2 2 1 2 4 5 2 1 4 2
2 2 4 4 6 2 2 4 2 4 5 0 0 0 4 11 24 23 5 20 11 7 5 5 6 7 9 9 6 3 6 4 1 2
6 12 10 11 10 11 9 4 0 0 0 0 10 23 30 14 5 7 1 1 4 8 7 6 10 19 6 12
4 7 13 22 18 9 2 0 0 0 1 1 9 8 4 7 12 6 5 2 7 4 12 23 22 28 14 6
2 4 4 9 1 0 0 0 2 1 3 2 11 7 5 0 10 12 7 19 30 10 2 2 2
2 0 1 4 2 1 6 1 1 4 2 3 0 0 2 1 13 6 3 4 2 1 2
1 2 0 0 1 2 5 1 11 9 0 4 4 2 2
1 2 0 4 2 3 2 1 0 0 0 1 2 2 1 1 0 1 1
2 2 1 4 4 0 1 0 0 1 1 1 3 2 1
1 2 1 1 1 1 8 7 1 0 0 6 2 1 5 1 2 2 3 3
1 3 1 2 3 0 3 3 3 5 2 2
1 1 1 2 0 1 2 2 2
1 2 2
0 0 0 0 0 2 1 1 1 1 1
1 1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
10828	00	V	150	48/ 9	12	0	16	-5.4	-2.1	16.7	2
10828	12	V	150	48/ 9	17	0	11	-4.0	-1.4	16.0	2
16754	12	V	150	35/ 25	17	0	5	-6.2	2.2	26.2	1
26477	12	V	300	56/ 31	21	0	42	5.3	11.7	25.3	7
42101	12	V	200	30/ 76	21	0	100	-6.5	-0.7	17.8	2
42182	00	V	200	29/ 77	25	0	100	-6.7	-11.6	16.7	2
42182	12	V	200	29/ 77	29	0	100	-3.3	-11.9	16.7	2
42361	00	V	300	26/ 78	11	0	100	2.5	7.9	22.0	1
42369	12	V	100	27/ 81	16	0	93	-13.7	-1.2	16.1	2
42410	12	V	150	26/ 92	17	0	100	-10.4	1.3	29.7	1
42492	00	V	250	26/ 85	11	0	100	-9.1	3.5	28.3	1
42701	00	V	200	23/ 85	26	0	100	-17.3	-2.0	21.8	5
42701	12	V	250	23/ 85	24	0	100	-17.6	0.7	20.2	5
43369	00	V	100	8/ 73	13	0	100	-0.1	2.5	16.8	1
47058	00	V	300	39/ 126	14	0	100	-11.2	-1.5	25.5	1
56146	12	V	100	32/ 100	11	0	100	7.5	-1.1	17.2	1
56691	12	V	200	27/ 104	28	0	3	-4.3	-1.7	25.2	1
58968	00	V	200	25/ 122	29	0	100	-11.4	-14.4	19.5	4
58968	12	V	250	25/ 122	28	0	100	-9.1	-15.4	18.8	4
60590	12	V	250	31/ 3	10	0	100	-24.8	6.2	31.2	4
62306	00	V	250	31/ 27	22	0	100	2.0	-9.8	17.6	4
62306	12	V	300	31/ 27	19	0	100	6.7	-6.9	15.8	1
62337	00	V	200	31/ 34	31	0	100	-14.9	15.0	27.1	5
62337	12	V	150	31/ 34	28	0	100	-22.2	8.3	29.4	5
62378	00	V	200	30/ 31	13	6	100	-9.2	2.0	17.4	1
62378	12	V	250	30/ 31	18	2	100	-5.1	8.4	25.3	1
62403	12	V	150	26/ 33	21	0	100	-2.0	4.2	30.1	2
62423	00	V	200	27/ 28	22	1	100	-2.6	0.3	19.2	1
68512	12	V	200	-30/ 18	18	0	100	-7.1	2.2	21.3	3
72249	00	V	150	33/ -97	19	0	10	-2.1	1.2	20.8	3
72376	00	V	300	37/-108	29	0	100	-0.3	2.7	15.9	1
72376	12	V	300	37/-108	28	0	100	-0.5	-4.6	17.6	3
76225	12	V	150	29/-106	16	0	6	-4.1	2.6	24.3	1
76805	12	V	150	17/-100	19	0	5	0.7	-3.2	17.0	1
89009	00	V	300	-90/ 0	28	0	17	-4.1	-13.0	17.0	1
96035	00	V	100	4/ 99	12	0	100	-0.5	-0.1	15.4	1
96935	00	V	300	-7/ 113	12	0	8	5.1	1.7	18.0	1
98223	00	V	150	18/ 121	28	0	28	6.2	3.7	15.9	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. MARCH 2005
All hours
Global average number of observations in 24 hours = 1355

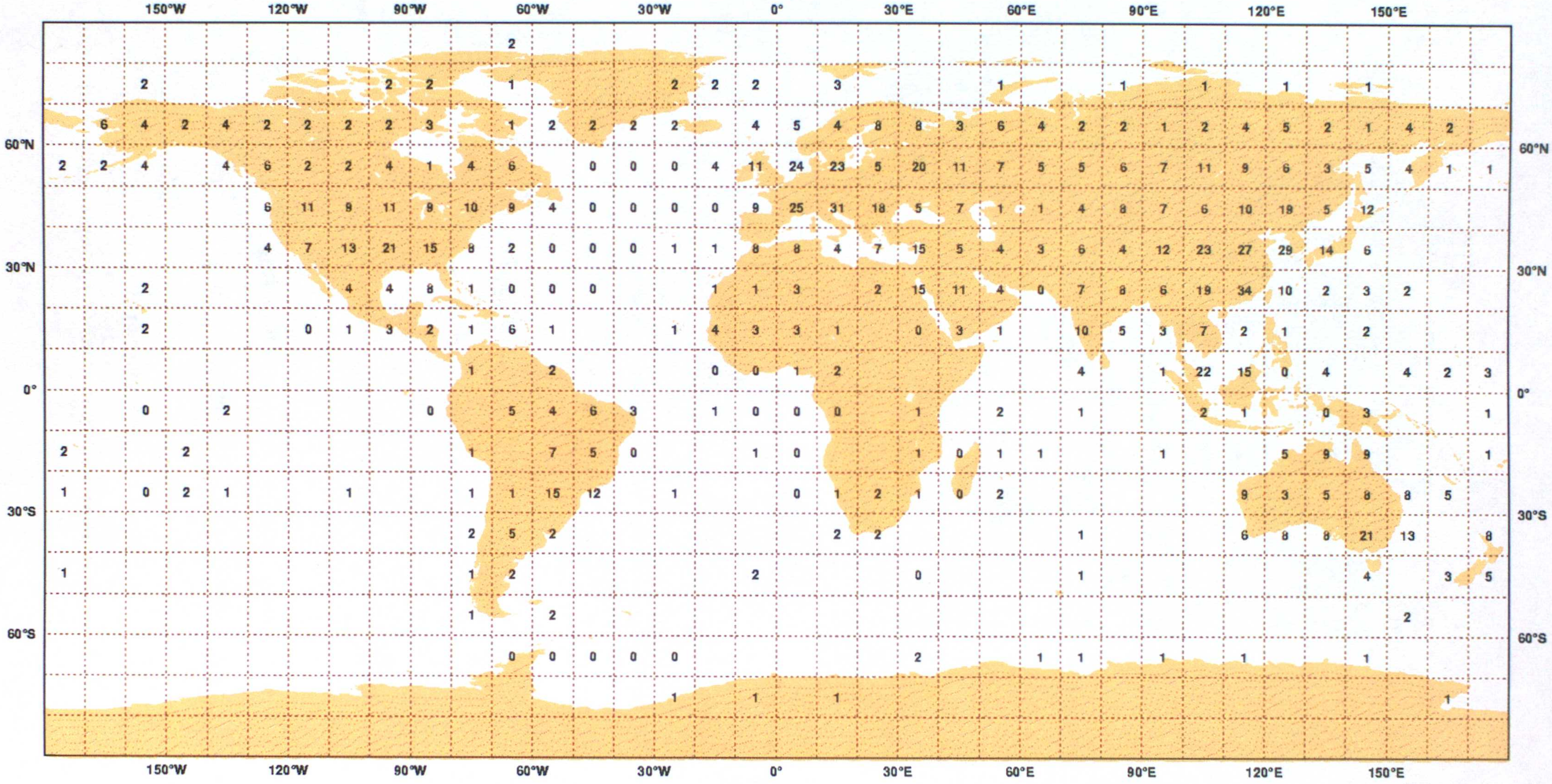

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2
2 2 2 1 2 2 2 3 1 1 1 1 1
6 4 2 4 2 2 2 2 3 1 2 2 2 2 4 5 4 8 8 3 6 4 2 2 1 2 4 5 2 1 4 2
2 2 4 4 6 2 2 4 1 4 6 0 0 0 4 11 24 23 5 20 11 7 5 5 6 7 11 9 6 3 5 4 1 1
6 11 9 11 9 10 9 4 0 0 0 0 9 25 31 18 5 7 1 1 4 8 7 6 10 19 5 12
4 7 13 21 15 8 2 0 0 0 1 1 8 8 4 7 15 5 4 3 6 4 12 23 27 29 14 6
2 4 4 8 1 0 0 0 1 1 3 2 15 11 4 0 7 8 6 19 34 10 2 3 2
2 0 1 3 2 1 6 1 1 4 3 3 1 0 3 1 10 5 3 7 2 1 2
1 2 0 0 1 2 4 1 22 15 0 4 4 2 3
0 2 0 5 4 6 3 1 0 0 0 1 2 1 2 1 0 3 1
2 2 1 7 5 0 1 0 1 0 1 1 1 5 9 9 1
1 0 2 1 1 1 1 15 12 1 0 1 2 1 0 2 9 3 5 8 8 5
2 5 2 2 2 1 6 8 8 21 13 8
1 1 2 2 0 1 4 3 5
1 2 2
0 0 0 0 0 2 1 1 1 1 1
1 1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
26477	12	DD	56/ 31	19	-51.9	3.4	10.5
33791	12	DD	48/ 33	23	-14.0	2.2	6.8
42182	00	DD	29/ 77	24	16.5	5.0	10.8
42182	12	DD	29/ 77	28	18.1	1.9	8.8
48407	12	DD	15/ 105	24	10.9	7.9	29.4
58968	00	DD	25/ 122	29	18.5	1.2	4.6
58968	12	DD	25/ 122	28	18.2	1.9	5.0
62337	00	DD	31/ 34	30	-20.1	2.0	5.9
62337	12	DD	31/ 34	28	-20.9	2.6	6.7
78397	12	DD	18/ -77	14	17.0	9.7	19.4
96749	00	DD	-6/ 107	12	-10.9	9.4	22.3

MONITORING OF SATELLITE WINDS

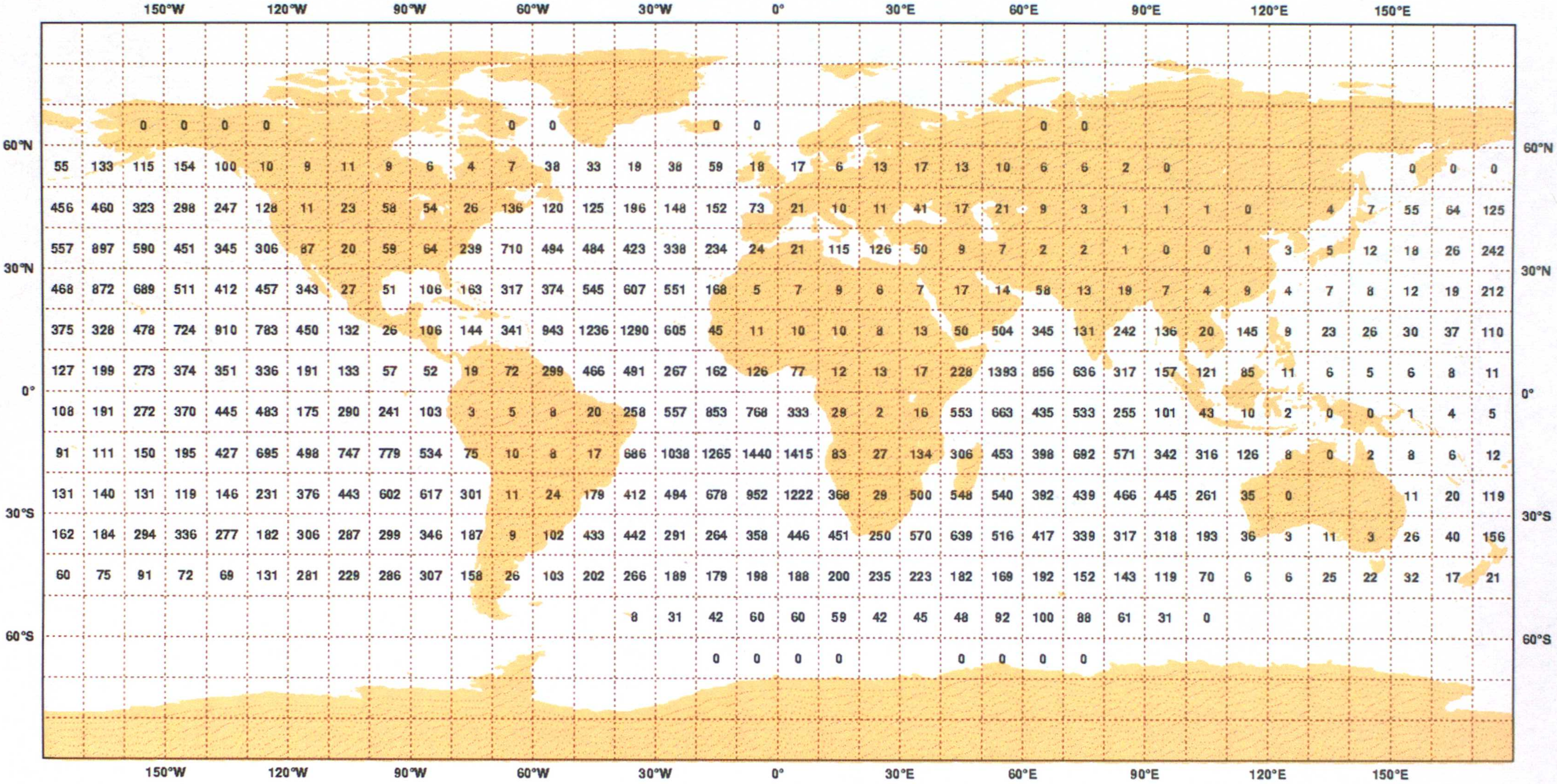
MONITORING CENTRE: EXETER

MONTH: Mar 2005

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-9, GOES-10, GOES-12, METEOSAT-5, METEOSAT-7
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa :Mean wind :Mean observation minus background vector wind differences :Mean observation minus background speed differences :RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. MARCH 2005
Global average number of observations in 24 hours = 85486



		0	0	0	0						0	0				0	0							0	0										
55	133	115	154	100	10	9	11	9	6	4	7	38	33	19	38	59	18	17	6	13	17	13	10	6	6	2	0						0	0	0
456	460	323	298	247	128	11	23	58	54	26	136	120	125	196	148	152	73	21	10	11	41	17	21	9	3	1	1	1	0		4	7	55	64	125
557	897	590	451	345	306	87	20	59	64	239	710	494	484	423	338	234	24	21	115	126	50	9	7	2	2	1	0	0	1	3	5	12	18	26	242
468	872	689	511	412	457	343	27	51	106	163	317	374	545	607	551	168	5	7	9	6	7	17	14	58	13	19	7	4	9	4	7	8	12	19	212
375	328	478	724	910	783	450	132	26	106	144	341	943	1236	1290	605	45	11	10	10	8	13	50	504	345	131	242	136	20	145	9	23	26	30	37	110
127	199	273	374	351	336	191	133	57	52	19	72	299	466	491	267	162	126	77	12	13	17	228	1393	856	636	317	157	121	85	11	6	5	6	8	11
108	191	272	370	445	483	175	290	241	103	3	5	8	20	258	557	853	768	333	29	2	16	553	663	435	533	255	101	43	10	2	0	0	1	4	5
91	111	150	195	427	685	498	747	779	534	75	10	8	17	686	1038	1265	1440	1415	83	27	134	306	453	398	692	571	342	316	126	8	0	2	8	6	12
131	140	131	119	146	231	376	443	602	617	301	11	24	179	412	494	678	952	1222	368	29	500	548	540	392	439	466	445	261	35	0			11	20	119
162	184	294	336	277	182	306	287	299	346	187	9	102	433	442	291	264	358	446	451	250	570	639	516	417	339	317	318	193	36	3	11	3	26	40	156
60	75	91	72	69	131	281	229	286	307	158	26	103	202	266	189	179	198	188	200	235	223	182	169	192	152	143	119	70	6	6	25	22	32	17	21
														8	31	42	60	60	59	42	45	48	92	100	88	61	31	0							
																0	0	0	0			0	0	0	0										

Figure 11. SATOB 701 - 1000 hPa vector mean wind. MARCH 2005
All observations
Arrows are plotted where greater than 10 obs are present

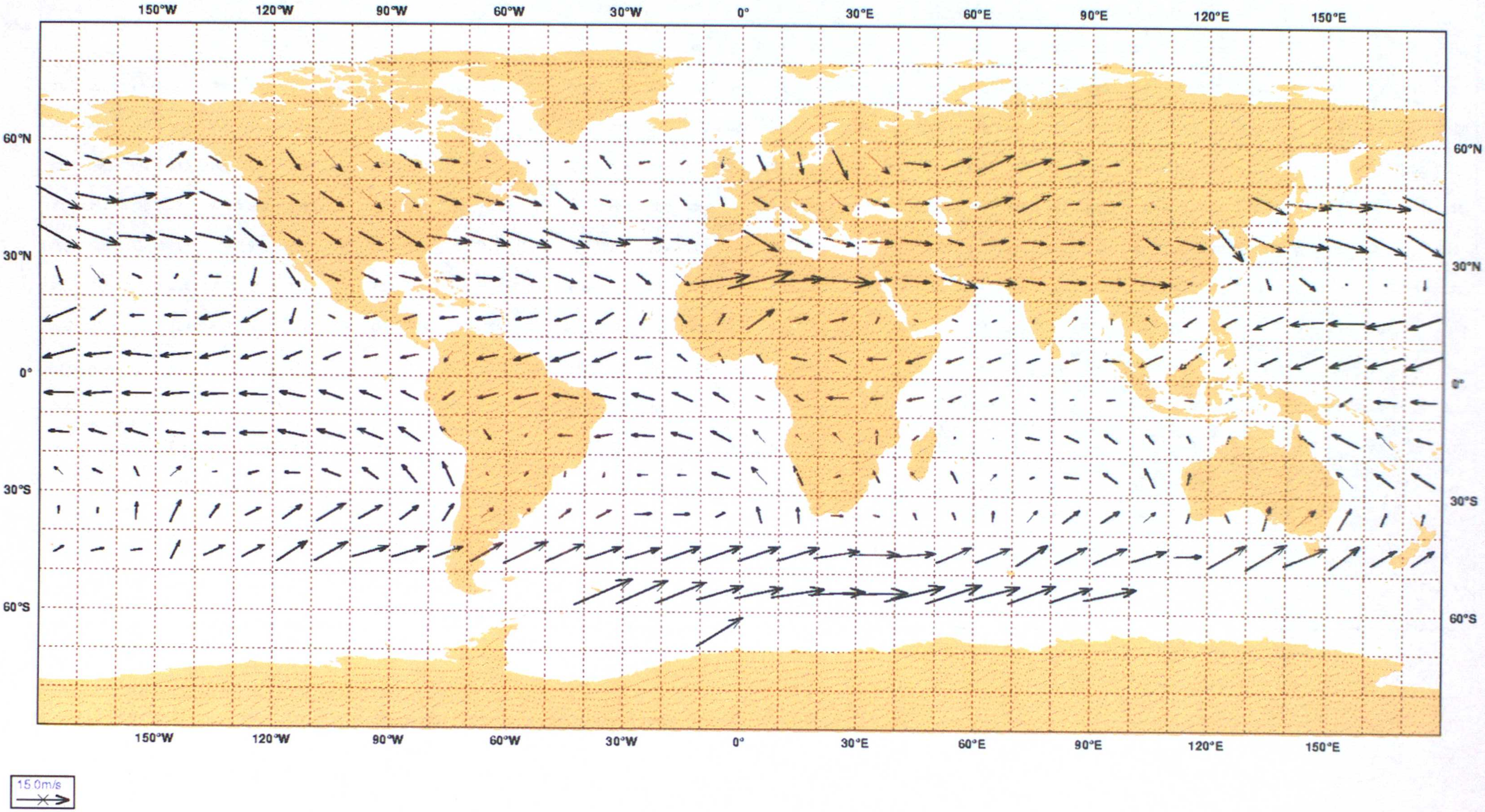

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 12. SATOB 701 - 1000 hPa mean vector wind differences. MARCH 2005
All observations
Arrows are plotted where greater than 10 obs are present

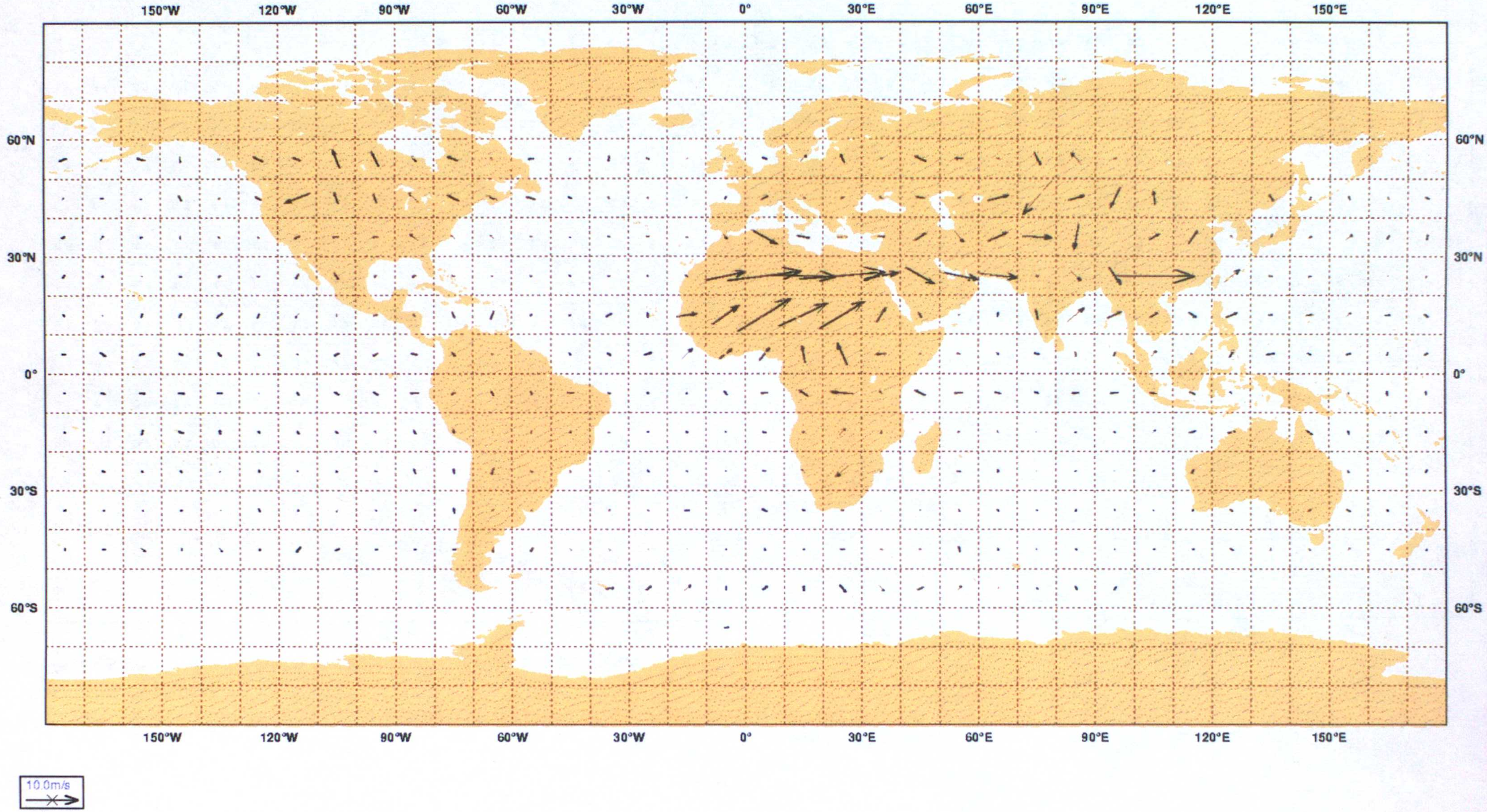
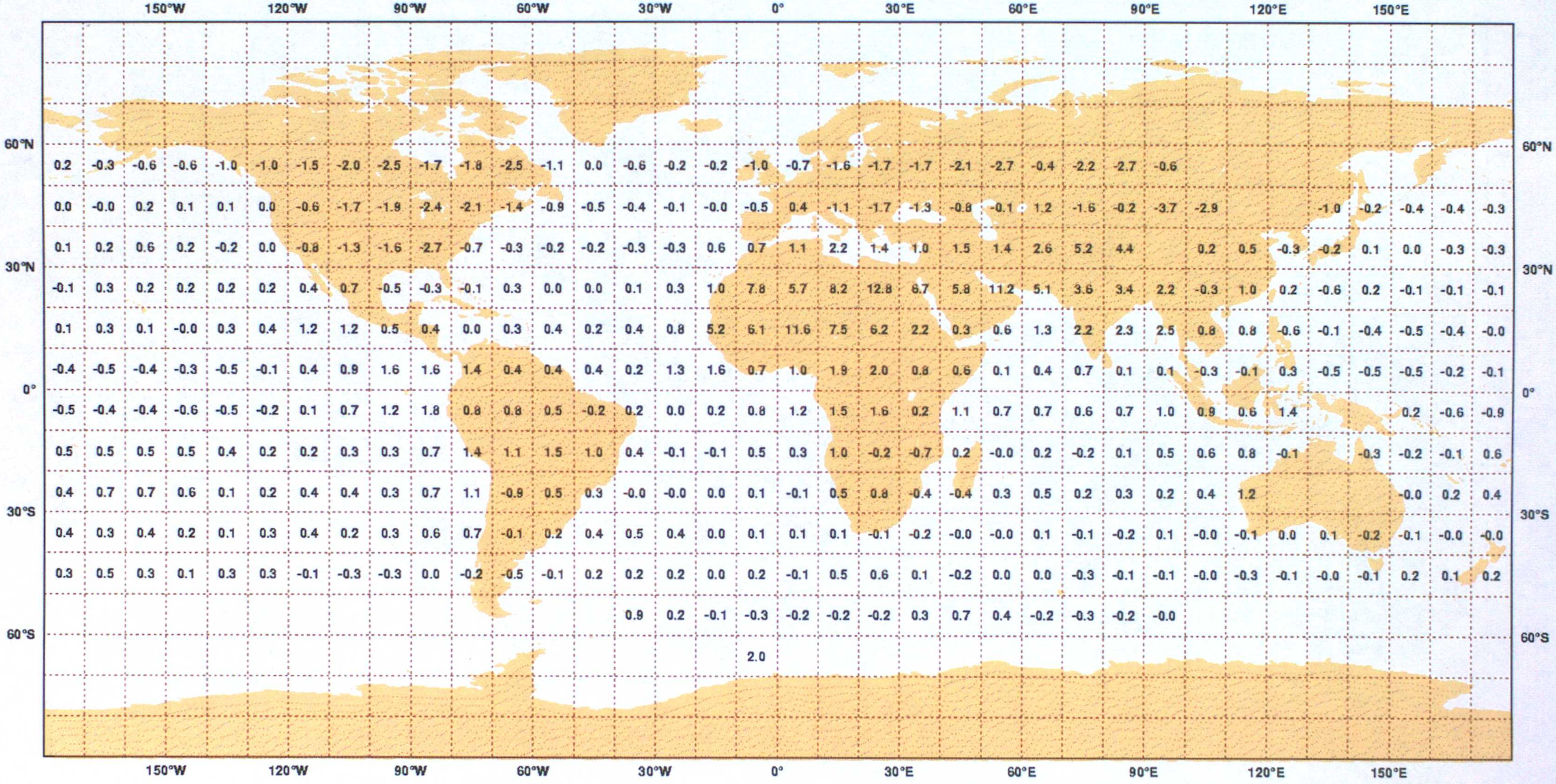

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). MARCH 2005

All observations

Values are plotted where greater than 10 obs are present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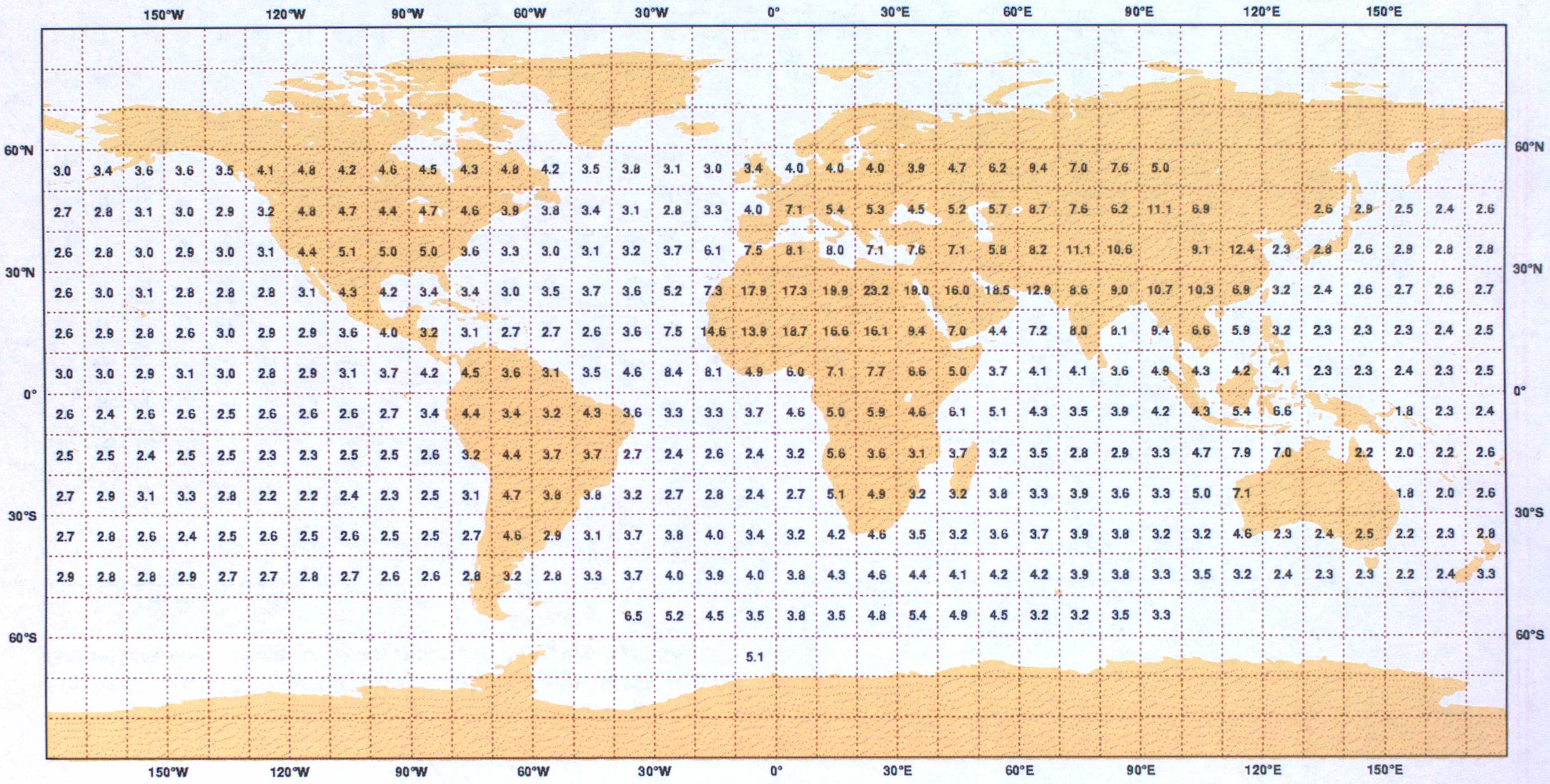
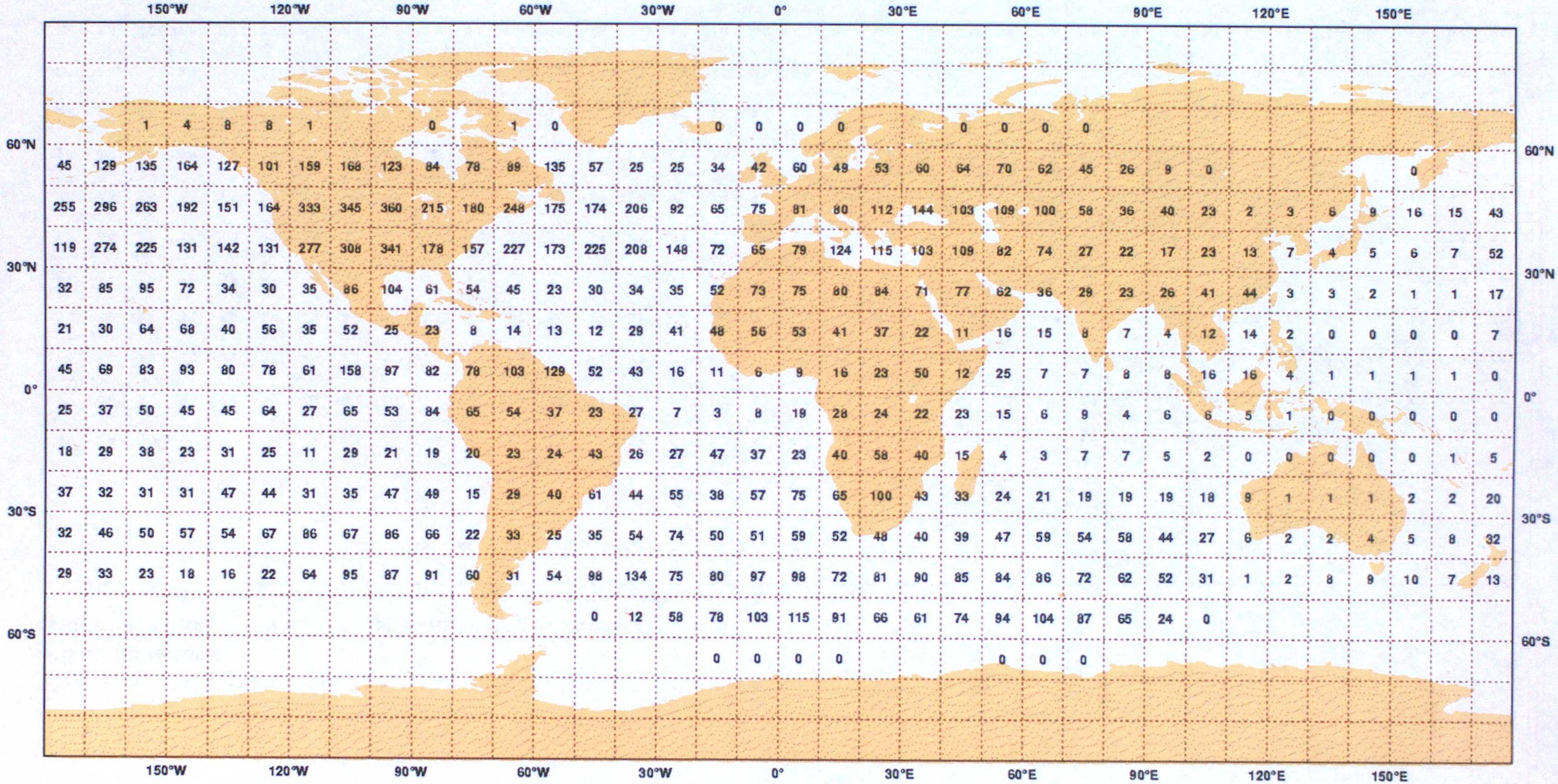
60°N 30°N 0° 30°S 60°S
0.2 -0.3 -0.6 -0.6 -1.0 -1.0 -1.5 -2.0 -2.5 -1.7 -1.8 -2.5 -1.1 0.0 -0.6 -0.2 -0.2 -1.0 -0.7 -1.6 -1.7 -1.7 -2.1 -2.7 -0.4 -2.2 -2.7 -0.6
0.0 -0.0 0.2 0.1 0.1 0.0 -0.6 -1.7 -1.9 -2.4 -2.1 -1.4 -0.9 -0.5 -0.4 -0.1 -0.0 -0.5 0.4 -1.1 -1.7 -1.3 -0.8 -0.1 1.2 -1.6 -0.2 -3.7 -2.9 -1.0 -0.2 -0.4 -0.4 -0.3
0.1 0.2 0.6 0.2 -0.2 0.0 -0.8 -1.3 -1.6 -2.7 -0.7 -0.3 -0.2 -0.2 -0.3 -0.3 0.6 0.7 1.1 2.2 1.4 1.0 1.5 1.4 2.6 5.2 4.4 0.2 0.5 -0.3 -0.2 0.1 0.0 -0.3 -0.3
-0.1 0.3 0.2 0.2 0.2 0.2 0.4 0.7 -0.5 -0.3 -0.1 0.3 0.0 0.0 0.1 0.3 1.0 7.8 5.7 8.2 12.8 6.7 5.8 11.2 5.1 3.6 3.4 2.2 -0.3 1.0 0.2 -0.6 0.2 -0.1 -0.1 -0.1
0.1 0.3 0.1 -0.0 0.3 0.4 1.2 1.2 0.5 0.4 0.0 0.3 0.4 0.2 0.4 0.8 5.2 6.1 11.6 7.5 6.2 2.2 0.3 0.6 1.3 2.2 2.3 2.5 0.8 0.8 -0.6 -0.1 -0.4 -0.5 -0.4 -0.0
-0.4 -0.5 -0.4 -0.3 -0.5 -0.1 0.4 0.9 1.6 1.6 1.4 0.4 0.4 0.4 0.2 1.3 1.6 0.7 1.0 1.9 2.0 0.8 0.6 0.1 0.4 0.7 0.1 0.1 -0.3 -0.1 0.3 -0.5 -0.5 -0.5 -0.2 -0.1
-0.5 -0.4 -0.4 -0.6 -0.5 -0.2 0.1 0.7 1.2 1.8 0.8 0.8 0.5 -0.2 0.2 0.0 0.2 0.8 1.2 1.5 1.6 0.2 1.1 0.7 0.7 0.6 0.7 1.0 0.9 0.6 1.4 0.2 -0.6 -0.9
0.5 0.5 0.5 0.5 0.4 0.2 0.2 0.3 0.3 0.7 1.4 1.1 1.5 1.0 0.4 -0.1 -0.1 0.5 0.3 1.0 -0.2 -0.7 0.2 -0.0 0.2 -0.2 0.1 0.5 0.6 0.8 -0.1 -0.3 -0.2 -0.1 0.6
0.4 0.7 0.7 0.6 0.1 0.2 0.4 0.4 0.3 0.7 1.1 -0.9 0.5 0.3 -0.0 -0.0 0.0 0.1 -0.1 0.5 0.8 -0.4 -0.4 0.3 0.5 0.2 0.3 0.2 0.4 1.2 -0.0 0.2 0.4
0.4 0.3 0.4 0.2 0.1 0.3 0.4 0.2 0.3 0.6 0.7 -0.1 0.2 0.4 0.5 0.4 0.0 0.1 0.1 0.1 -0.1 -0.2 -0.0 -0.0 0.1 -0.1 -0.2 0.1 -0.0 -0.1 0.0 0.1 -0.2 -0.1 -0.0 -0.0
0.3 0.5 0.3 0.1 0.3 0.3 -0.1 -0.3 -0.3 0.0 -0.2 -0.5 -0.1 0.2 0.2 0.2 0.0 0.2 -0.1 0.5 0.6 0.1 -0.2 0.0 0.0 -0.3 -0.1 -0.1 -0.0 -0.3 -0.1 -0.0 -0.1 0.2 0.1 0.2
0.9 0.2 -0.1 -0.3 -0.2 -0.2 -0.2 0.3 0.7 0.4 -0.2 -0.3 -0.2 -0.0
2.0

Figure 14. SATOB 701 - 1000 hPa mean RMS O-B vector differences (ms-1). MARCH 2005
All observations
Values are plotted where greater than 10 obs are present



3.0	3.4	3.6	3.6	3.5	4.1	4.8	4.2	4.6	4.5	4.3	4.8	4.2	3.5	3.8	3.1	3.0	3.4	4.0	4.0	4.0	3.9	4.7	6.2	9.4	7.0	7.6	5.0								
2.7	2.8	3.1	3.0	2.9	3.2	4.8	4.7	4.4	4.7	4.6	3.9	3.8	3.4	3.1	2.8	3.3	4.0	7.1	5.4	5.3	4.5	5.2	5.7	8.7	7.6	6.2	11.1	6.9			2.6	2.9	2.5	2.4	2.6
2.6	2.8	3.0	2.9	3.0	3.1	4.4	5.1	5.0	5.0	3.6	3.3	3.0	3.1	3.2	3.7	6.1	7.5	8.1	8.0	7.1	7.6	7.1	5.8	8.2	11.1	10.6		9.1	12.4	2.3	2.8	2.6	2.9	2.8	2.8
2.6	3.0	3.1	2.8	2.8	2.8	3.1	4.3	4.2	3.4	3.4	3.0	3.5	3.7	3.6	5.2	7.3	17.9	17.3	19.9	23.2	19.0	16.0	18.5	12.9	8.6	9.0	10.7	10.3	6.9	3.2	2.4	2.6	2.7	2.6	2.7
2.6	2.9	2.8	2.6	3.0	2.9	2.9	3.6	4.0	3.2	3.1	2.7	2.7	2.6	3.6	7.5	14.6	13.9	18.7	16.6	16.1	9.4	7.0	4.4	7.2	8.0	8.1	9.4	6.6	5.9	3.2	2.3	2.3	2.3	2.4	2.5
3.0	3.0	2.9	3.1	3.0	2.8	2.9	3.1	3.7	4.2	4.5	3.6	3.1	3.5	4.6	8.4	8.1	4.9	6.0	7.1	7.7	6.6	5.0	3.7	4.1	4.1	3.6	4.9	4.3	4.2	4.1	2.3	2.3	2.4	2.3	2.5
2.6	2.4	2.6	2.6	2.5	2.6	2.6	2.6	2.7	3.4	4.4	3.4	3.2	4.3	3.6	3.3	3.3	3.7	4.6	5.0	5.9	4.6	6.1	5.1	4.3	3.5	3.9	4.2	4.3	5.4	6.6			1.8	2.3	2.4
2.5	2.5	2.4	2.5	2.5	2.3	2.3	2.5	2.5	2.6	3.2	4.4	3.7	3.7	2.7	2.4	2.6	2.4	3.2	5.6	3.6	3.1	3.7	3.2	3.5	2.8	2.9	3.3	4.7	7.9	7.0		2.2	2.0	2.2	2.6
2.7	2.9	3.1	3.3	2.8	2.2	2.2	2.4	2.3	2.5	3.1	4.7	3.8	3.8	3.2	2.7	2.8	2.4	2.7	5.1	4.9	3.2	3.2	3.8	3.3	3.9	3.6	3.3	5.0	7.1				1.8	2.0	2.6
2.7	2.8	2.6	2.4	2.5	2.6	2.5	2.6	2.5	2.5	2.7	4.6	2.9	3.1	3.7	3.8	4.0	3.4	3.2	4.2	4.6	3.5	3.2	3.6	3.7	3.9	3.8	3.2	3.2	4.6	2.3	2.4	2.5	2.2	2.3	2.8
2.9	2.8	2.8	2.9	2.7	2.7	2.8	2.7	2.6	2.6	2.8	3.2	2.8	3.3	3.7	4.0	3.9	4.0	3.8	4.3	4.6	4.4	4.1	4.2	4.2	3.9	3.8	3.3	3.5	3.2	2.4	2.3	2.3	2.2	2.4	3.3
														6.5	5.2	4.5	3.5	3.8	3.5	4.8	5.4	4.9	4.5	3.2	3.2	3.5	3.3								
																	5.1																		

Figure 15. SATOB 401 - 700 hPa mean daily count. MARCH 2005
Global average number of observations in 24 hours = 22634



		1	4	8	8	1			0		1	0				0	0	0	0			0	0	0	0										
45	129	135	164	127	101	159	168	123	84	78	89	135	57	25	25	34	42	60	49	53	60	64	70	62	45	26	9	0					0		
255	296	263	192	151	164	333	345	360	215	180	248	175	174	206	92	65	75	81	80	112	144	103	109	100	58	36	40	23	2	3	6	9	16	15	43
119	274	225	131	142	131	277	308	341	178	157	227	173	225	208	148	72	65	79	124	115	103	109	82	74	27	22	17	23	13	7	4	5	6	7	52
32	85	95	72	34	30	35	86	104	61	54	45	23	30	34	35	52	73	75	80	84	71	77	62	36	29	23	26	41	44	3	3	2	1	1	17
21	30	64	68	40	56	35	52	25	23	8	14	13	12	29	41	48	56	53	41	37	22	11	16	15	8	7	4	12	14	2	0	0	0	0	7
45	69	83	93	80	78	61	158	97	82	78	103	129	52	43	16	11	6	9	16	23	50	12	25	7	7	8	8	16	16	4	1	1	1	1	0
25	37	50	45	45	64	27	65	53	84	65	54	37	23	27	7	3	8	19	28	24	22	23	15	6	9	4	6	6	5	1	0	0	0	0	0
18	29	38	23	31	25	11	29	21	19	20	23	24	43	26	27	47	37	23	40	58	40	15	4	3	7	7	5	2	0	0	0	0	0	1	5
37	32	31	31	47	44	31	35	47	49	15	29	40	61	44	55	38	57	75	65	100	43	33	24	21	19	19	19	18	9	1	1	1	2	2	20
32	46	50	57	54	67	86	67	86	66	22	33	25	35	54	74	50	51	59	52	48	40	39	47	59	54	58	44	27	6	2	2	4	5	8	32
29	33	23	18	16	22	64	95	87	91	60	31	54	98	134	75	80	97	98	72	81	90	85	84	86	72	62	52	31	1	2	8	9	10	7	13
													0	12	58	78	103	115	91	66	61	74	94	104	87	65	24	0							
																0	0	0	0				0	0	0										

Figure 16. SATOB 401 - 700 hPa vector mean wind. MARCH 2005
All observations
Arrows are plotted where greater than 10 obs are present

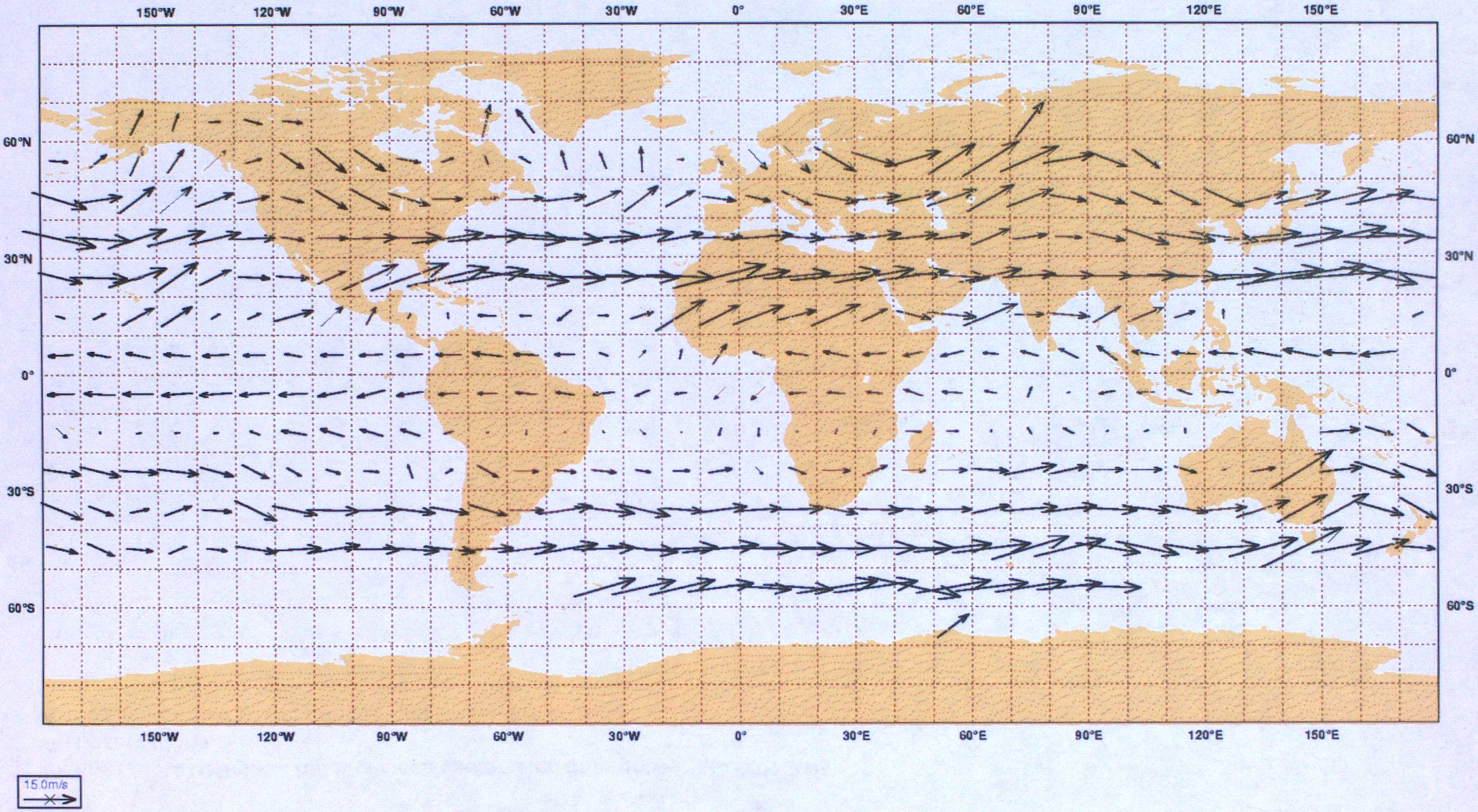

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 17. SATOB 401 - 700 hPa mean vector wind differences. MARCH 2005
All observations
Arrows are plotted where greater than 10 obs are present

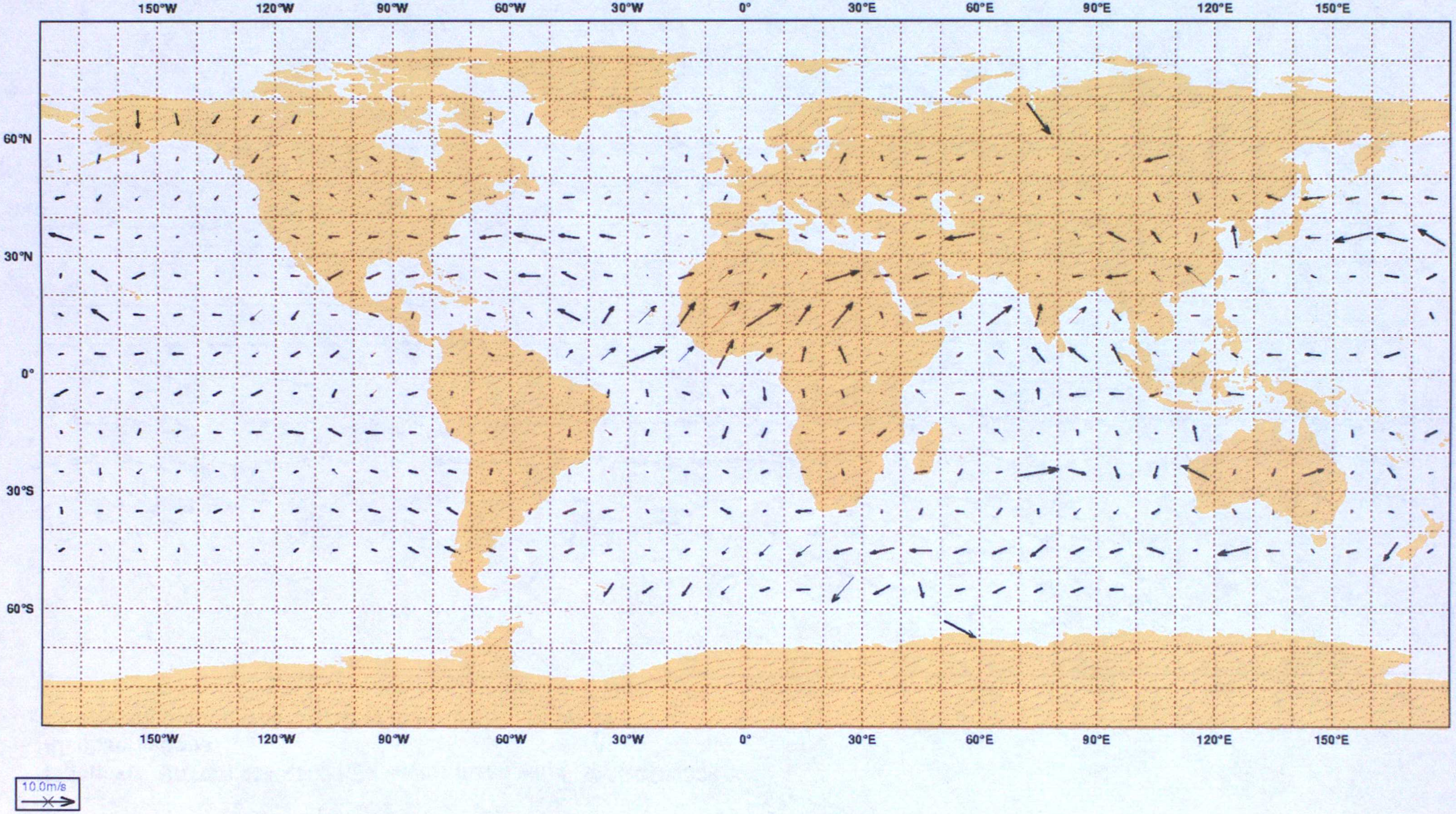

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). MARCH 2005
All observations
Values are plotted where greater than 10 obs are present

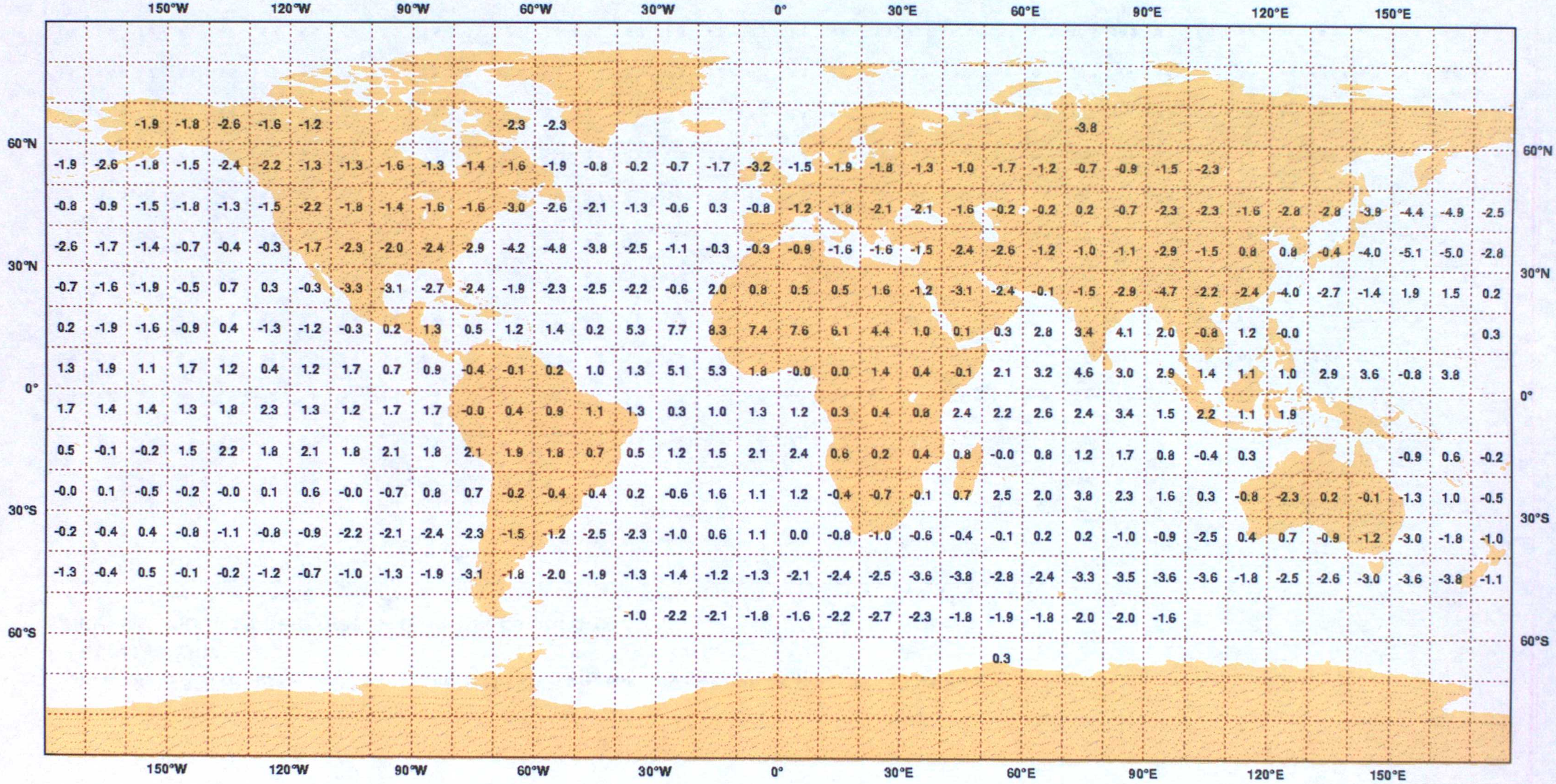

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-1.9 -1.8 -2.6 -1.6 -1.2 -2.3 -2.3 -3.8
-1.9 -2.6 -1.8 -1.5 -2.4 -2.2 -1.3 -1.3 -1.6 -1.3 -1.4 -1.6 -1.9 -0.8 -0.2 -0.7 -1.7 -3.2 -1.5 -1.9 -1.8 -1.3 -1.0 -1.7 -1.2 -0.7 -0.9 -1.5 -2.3
-0.8 -0.9 -1.5 -1.8 -1.3 -1.5 -2.2 -1.8 -1.4 -1.6 -1.6 -3.0 -2.6 -2.1 -1.3 -0.6 0.3 -0.8 -1.2 -1.8 -2.1 -2.1 -1.6 -0.2 -0.2 0.2 -0.7 -2.3 -2.3 -1.6 -2.8 -2.8 -3.9 -4.4 -4.9 -2.5
-2.6 -1.7 -1.4 -0.7 -0.4 -0.3 -1.7 -2.3 -2.0 -2.4 -2.9 -4.2 -4.8 -3.8 -2.5 -1.1 -0.3 -0.3 -0.9 -1.6 -1.6 -1.5 -2.4 -2.6 -1.2 -1.0 -1.1 -2.9 -1.5 0.8 0.8 -0.4 -4.0 -5.1 -5.0 -2.8
-0.7 -1.6 -1.9 -0.5 0.7 0.3 -0.3 -3.3 -3.1 -2.7 -2.4 -1.9 -2.3 -2.5 -2.2 -0.6 2.0 0.8 0.5 0.5 1.6 -1.2 -3.1 -2.4 -0.1 -1.5 -2.9 -4.7 -2.2 -2.4 -4.0 -2.7 -1.4 1.9 1.5 0.2
0.2 -1.9 -1.6 -0.9 0.4 -1.3 -1.2 -0.3 0.2 1.3 0.5 1.2 1.4 0.2 5.3 7.7 8.3 7.4 7.6 6.1 4.4 1.0 0.1 0.3 2.8 3.4 4.1 2.0 -0.8 1.2 -0.0 0.3
1.3 1.9 1.1 1.7 1.2 0.4 1.2 1.7 0.7 0.9 -0.4 -0.1 0.2 1.0 1.3 5.1 5.3 1.8 -0.0 0.0 1.4 0.4 -0.1 2.1 3.2 4.6 3.0 2.9 1.4 1.1 1.0 2.9 3.6 -0.8 3.8
1.7 1.4 1.4 1.3 1.8 2.3 1.3 1.2 1.7 1.7 -0.0 0.4 0.9 1.1 1.3 0.3 1.0 1.3 1.2 0.3 0.4 0.8 2.4 2.2 2.6 2.4 3.4 1.5 2.2 1.1 1.9
0.5 -0.1 -0.2 1.5 2.2 1.8 2.1 1.8 2.1 1.8 2.1 1.9 1.8 0.7 0.5 1.2 1.5 2.1 2.4 0.6 0.2 0.4 0.8 -0.0 0.8 1.2 1.7 0.8 -0.4 0.3 -0.9 0.6 -0.2
-0.0 0.1 -0.5 -0.2 -0.0 0.1 0.6 -0.0 -0.7 0.8 0.7 -0.2 -0.4 -0.4 0.2 -0.6 1.6 1.1 1.2 -0.4 -0.7 -0.1 0.7 2.5 2.0 3.8 2.3 1.6 0.3 -0.8 -2.3 0.2 -0.1 -1.3 1.0 -0.5
-0.2 -0.4 0.4 -0.8 -1.1 -0.8 -0.9 -2.2 -2.1 -2.4 -2.3 -1.5 -1.2 -2.5 -2.3 -1.0 0.6 1.1 0.0 -0.8 -1.0 -0.6 -0.4 -0.1 0.2 0.2 -1.0 -0.9 -2.5 0.4 0.7 -0.9 -1.2 -3.0 -1.8 -1.0
-1.3 -0.4 0.5 -0.1 -0.2 -1.2 -0.7 -1.0 -1.3 -1.9 -3.1 -1.8 -2.0 -1.9 -1.3 -1.4 -1.2 -1.3 -2.1 -2.4 -2.5 -3.6 -3.8 -2.8 -2.4 -3.3 -3.5 -3.6 -3.6 -1.8 -2.5 -2.6 -3.0 -3.6 -3.8 -1.1
-1.0 -2.2 -2.1 -1.8 -1.6 -2.2 -2.7 -2.3 -1.8 -1.9 -1.8 -2.0 -2.0 -1.6
0.3

Figure 19. SATOB 401 - 700 hPa mean RMS O-B vector differences (ms-1). MARCH 2005
All observations
Values are plotted where greater than 10 obs are present

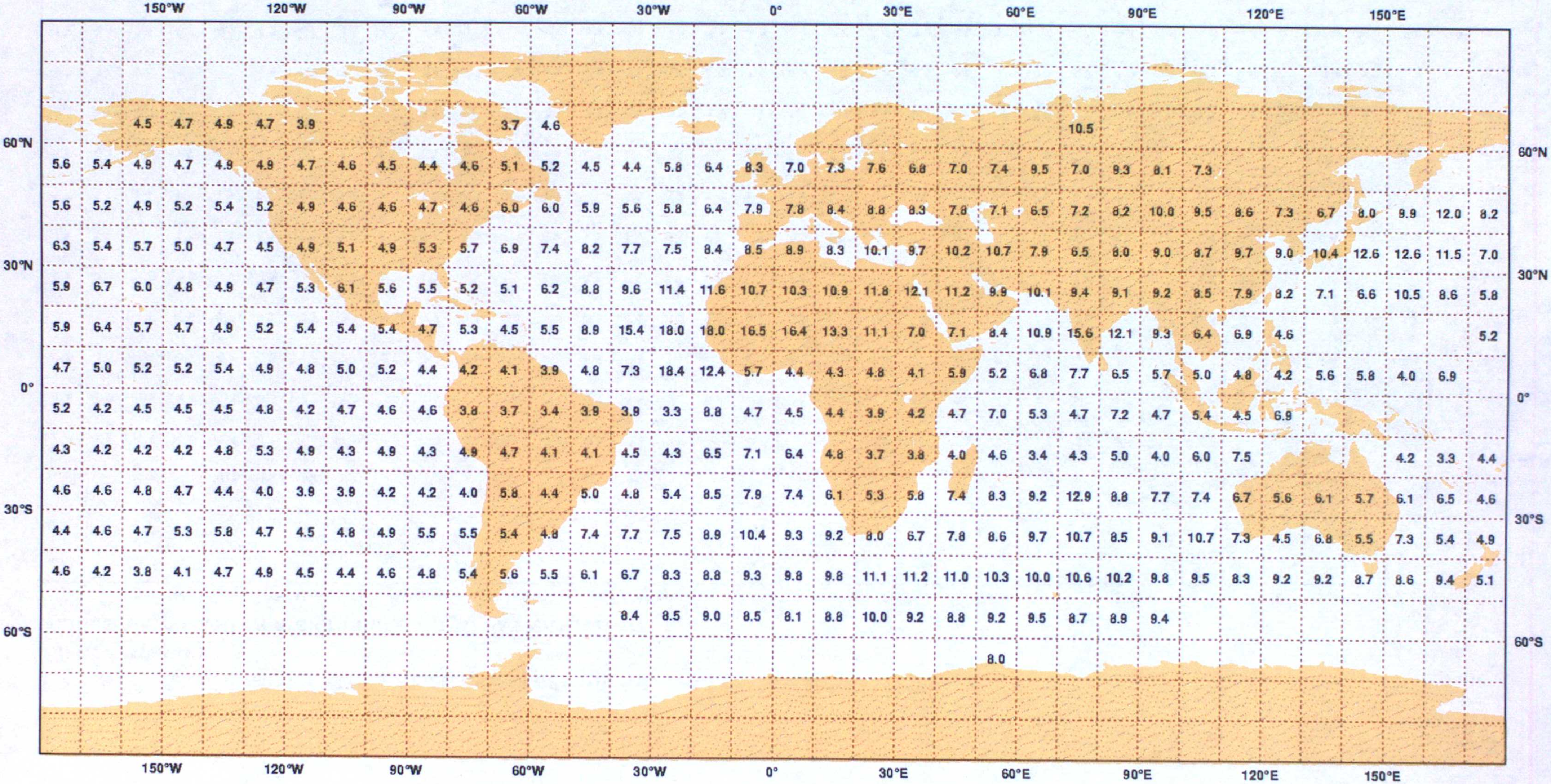

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
4.5 4.7 4.9 4.7 3.9 3.7 4.6 10.5
5.6 5.4 4.9 4.7 4.9 4.9 4.7 4.6 4.5 4.4 4.6 5.1 5.2 4.5 4.4 5.8 6.4 8.3 7.0 7.3 7.6 6.8 7.0 7.4 9.5 7.0 9.3 8.1 7.3
5.6 5.2 4.9 5.2 5.4 5.2 4.9 4.6 4.6 4.7 4.6 6.0 6.0 5.9 5.6 5.8 6.4 7.9 7.8 8.4 8.8 8.3 7.8 7.1 6.5 7.2 8.2 10.0 9.5 8.6 7.3 6.7 8.0 9.9 12.0 8.2
6.3 5.4 5.7 5.0 4.7 4.5 4.9 5.1 4.9 5.3 5.7 6.9 7.4 8.2 7.7 7.5 8.4 8.5 8.9 8.3 10.1 9.7 10.2 10.7 7.9 6.5 8.0 9.0 8.7 9.7 9.0 10.4 12.6 12.6 11.5 7.0
5.9 6.7 6.0 4.8 4.9 4.7 5.3 6.1 5.6 5.5 5.2 5.1 6.2 8.8 9.6 11.4 11.6 10.7 10.3 10.9 11.8 12.1 11.2 9.9 10.1 9.4 9.1 9.2 8.5 7.9 8.2 7.1 6.6 10.5 8.6 5.8
5.9 6.4 5.7 4.7 4.9 5.2 5.4 5.4 5.4 4.7 5.3 4.5 5.5 8.9 15.4 18.0 18.0 16.5 16.4 13.3 11.1 7.0 7.1 8.4 10.9 15.6 12.1 9.3 6.4 6.9 4.6 5.2
4.7 5.0 5.2 5.2 5.4 4.9 4.8 5.0 5.2 4.4 4.2 4.1 3.9 4.8 7.3 18.4 12.4 5.7 4.4 4.3 4.8 4.1 5.9 5.2 6.8 7.7 6.5 5.7 5.0 4.8 4.2 5.6 5.8 4.0 6.9
5.2 4.2 4.5 4.5 4.5 4.8 4.2 4.7 4.6 4.6 3.8 3.7 3.4 3.9 3.9 3.3 8.8 4.7 4.5 4.4 3.9 4.2 4.7 7.0 5.3 4.7 7.2 4.7 5.4 4.5 6.9
4.3 4.2 4.2 4.2 4.8 5.3 4.9 4.3 4.9 4.3 4.9 4.7 4.1 4.1 4.5 4.3 6.5 7.1 6.4 4.8 3.7 3.8 4.0 4.6 3.4 4.3 5.0 4.0 6.0 7.5 4.2 3.3 4.4
4.6 4.6 4.8 4.7 4.4 4.0 3.9 3.9 4.2 4.2 4.0 5.8 4.4 5.0 4.8 5.4 8.5 7.9 7.4 6.1 5.3 5.8 7.4 8.3 9.2 12.9 8.8 7.7 7.4 6.7 5.6 6.1 5.7 6.1 6.5 4.6
4.4 4.6 4.7 5.3 5.8 4.7 4.5 4.8 4.9 5.5 5.5 5.4 4.8 7.4 7.7 7.5 8.9 10.4 9.3 9.2 8.0 6.7 7.8 8.6 9.7 10.7 8.5 9.1 10.7 7.3 4.5 6.8 5.5 7.3 5.4 4.9
4.6 4.2 3.8 4.1 4.7 4.9 4.5 4.4 4.6 4.8 5.4 5.6 5.5 6.1 6.7 8.3 8.8 9.3 9.8 9.8 11.1 11.2 11.0 10.3 10.0 10.6 10.2 9.8 9.5 8.3 9.2 9.2 8.7 8.6 9.4 5.1
8.4 8.5 9.0 8.5 8.1 8.8 10.0 9.2 8.8 9.2 9.5 8.7 8.9 9.4
8.0

Figure 20. SATOB 101 - 400 hPa mean daily count. MARCH 2005
Global average number of observations in 24 hours = 199366

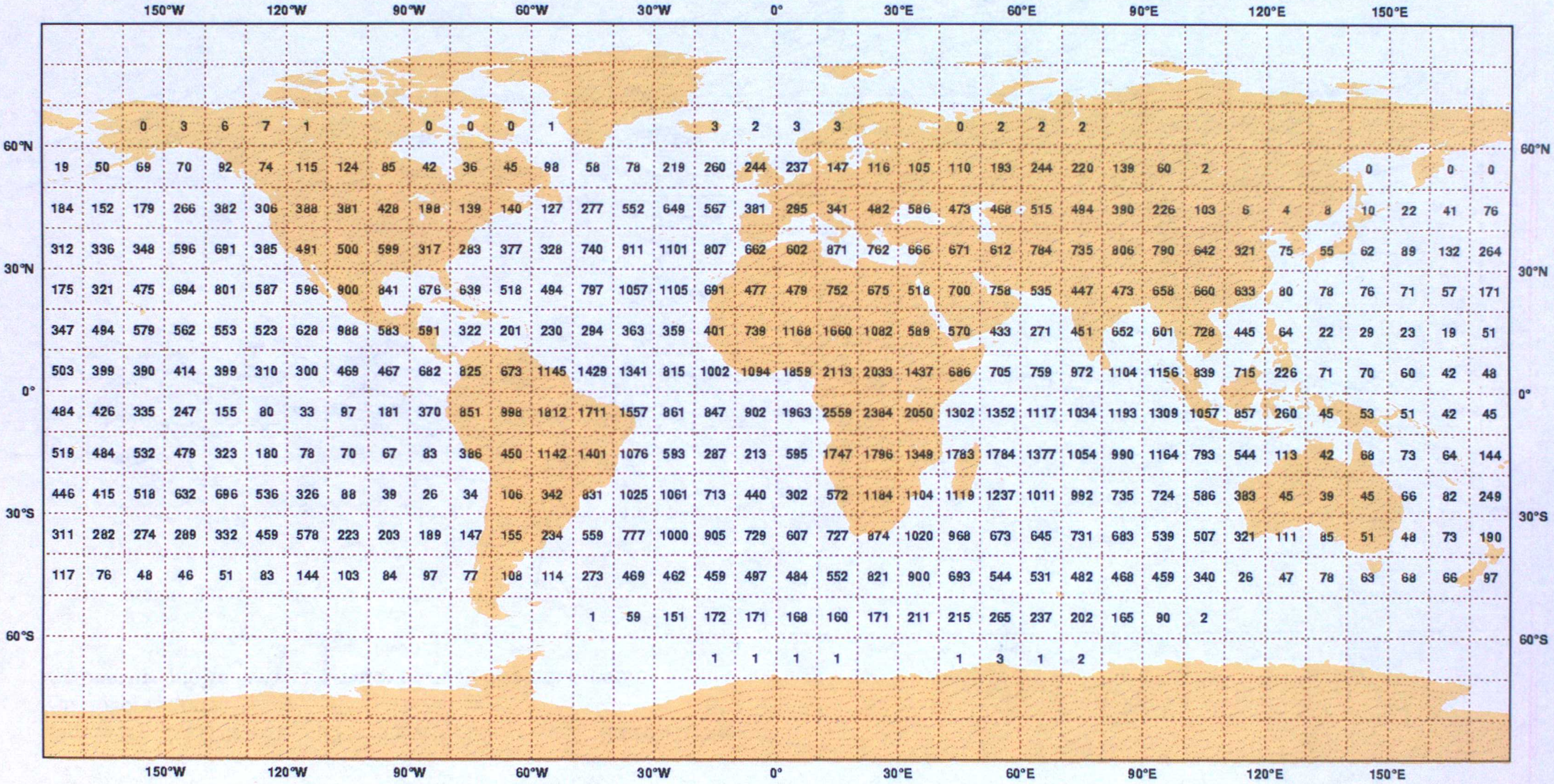

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
0 3 6 7 1 0 0 0 1 3 2 3 3 0 2 2 2
19 50 69 70 92 74 115 124 85 42 36 45 98 58 78 219 260 244 237 147 116 105 110 193 244 220 139 60 2 0 0 0
184 152 179 266 382 306 388 381 428 198 139 140 127 277 552 649 567 381 295 341 482 586 473 468 515 494 390 226 103 6 4 8 10 22 41 76
312 336 348 596 691 385 491 500 599 317 283 377 328 740 911 1101 807 662 602 871 762 666 671 612 784 735 806 790 642 321 75 55 62 89 132 264
175 321 475 694 801 587 596 900 841 676 639 518 494 797 1057 1105 691 477 479 752 675 518 700 758 535 447 473 658 660 633 80 78 76 71 57 171
347 494 579 562 553 523 628 988 583 591 322 201 230 294 363 359 401 739 1168 1660 1082 589 570 433 271 451 652 601 728 445 64 22 29 23 19 51
503 399 390 414 399 310 300 469 467 682 825 673 1145 1429 1341 815 1002 1094 1859 2113 2033 1437 686 705 759 972 1104 1156 839 715 226 71 70 60 42 48
484 426 335 247 155 80 33 97 181 370 851 998 1812 1711 1557 861 847 902 1963 2559 2384 2050 1302 1352 1117 1034 1193 1309 1057 857 260 45 53 51 42 45
519 484 532 479 323 180 78 70 67 83 386 450 1142 1401 1076 593 287 213 595 1747 1796 1349 1783 1784 1377 1054 990 1164 793 544 113 42 68 73 64 144
446 415 518 632 696 536 326 88 39 26 34 106 342 831 1025 1061 713 440 302 572 1184 1104 1119 1237 1011 992 735 724 586 383 45 39 45 66 82 249
311 282 274 289 332 459 578 223 203 189 147 155 234 559 777 1000 905 729 607 727 874 1020 968 673 645 731 683 539 507 321 111 85 51 48 73 190
117 76 48 46 51 83 144 103 84 97 77 108 114 273 469 462 459 497 484 552 821 900 693 544 531 482 468 459 340 26 47 78 63 68 66 97
1 59 151 172 171 168 160 171 211 215 265 237 202 165 90 2
1 1 1 1 1 3 1 2

Figure 21. SATOB 101 - 400 hPa vector mean wind. MARCH 2005
All observations
Arrows are plotted where greater than 10 obs are present

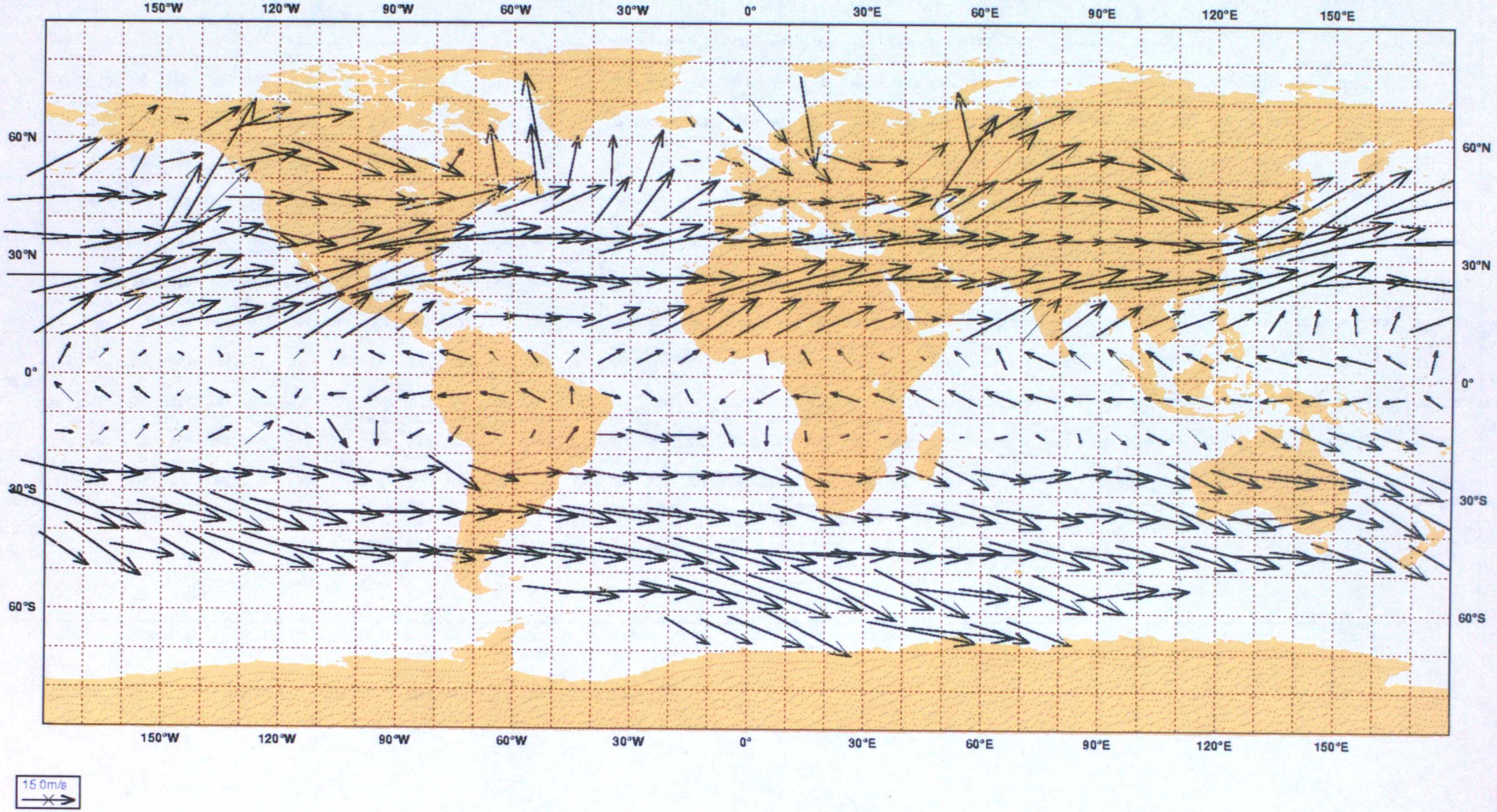

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 22. SATOB 101 - 400 hPa mean vector wind differences. MARCH 2005
All observations
Arrows are plotted where greater than 10 obs are present

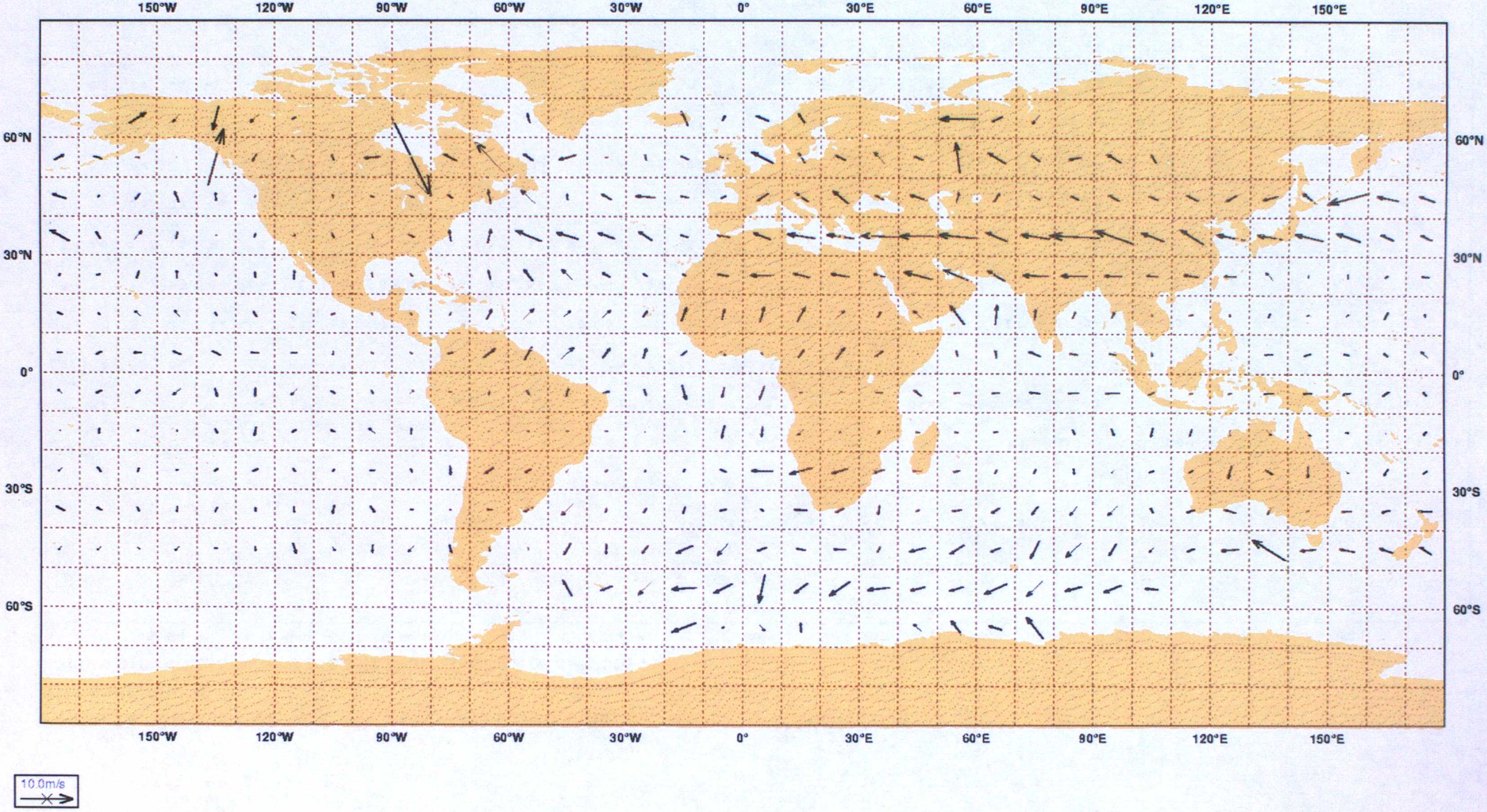

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). MARCH 2005
All observations
Values are plotted where greater than 10 obs are present

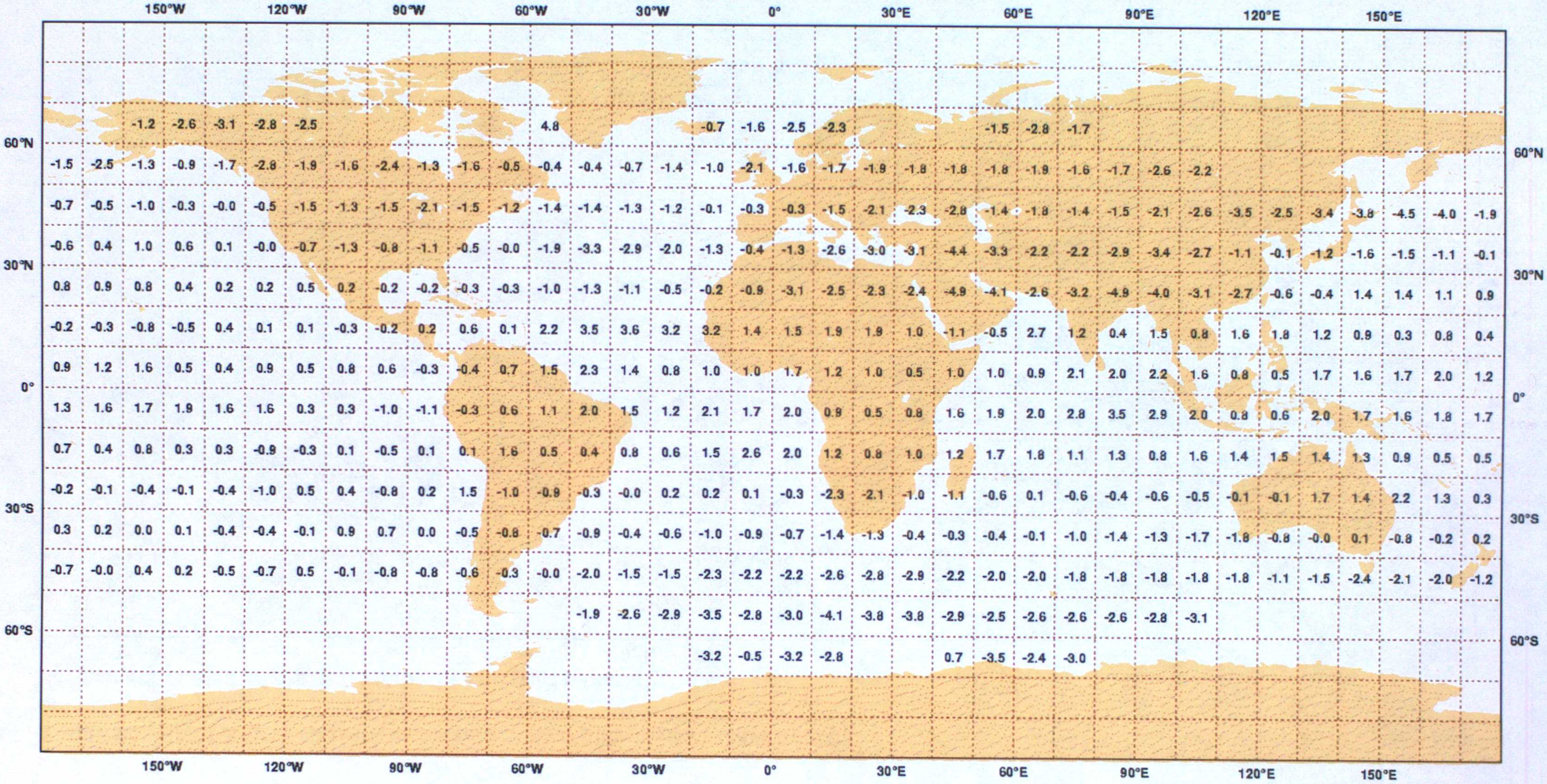
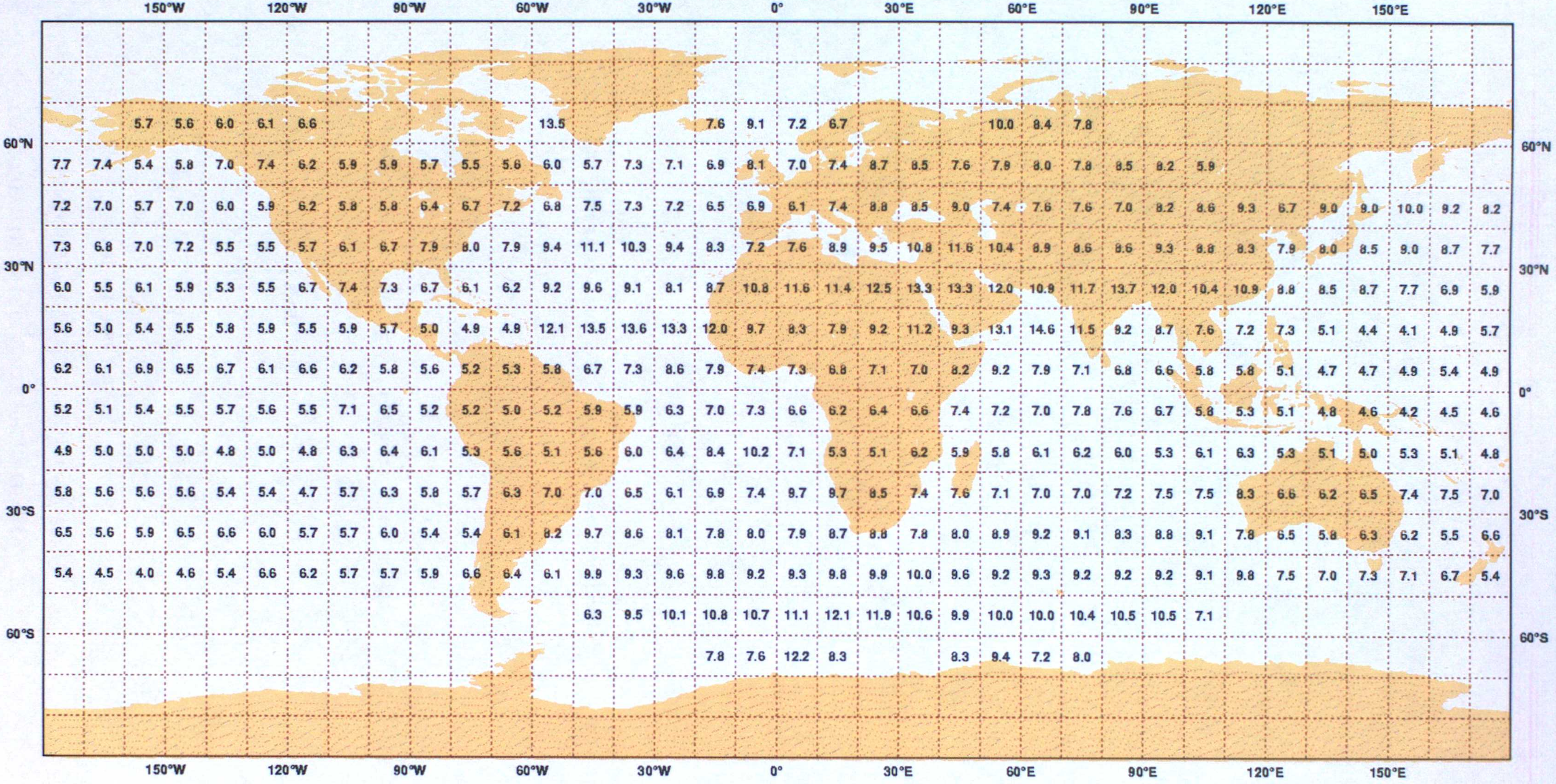

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
-1.2 -2.6 -3.1 -2.8 -2.5 4.8 -0.7 -1.6 -2.5 -2.3 -1.5 -2.8 -1.7
-1.5 -2.5 -1.3 -0.9 -1.7 -2.8 -1.9 -1.6 -2.4 -1.3 -1.6 -0.5 -0.4 -0.4 -0.7 -1.4 -1.0 -2.1 -1.6 -1.7 -1.9 -1.8 -1.8 -1.8 -1.9 -1.6 -1.7 -2.6 -2.2
-0.7 -0.5 -1.0 -0.3 -0.0 -0.5 -1.5 -1.3 -1.5 -2.1 -1.5 -1.2 -1.4 -1.4 -1.3 -1.2 -0.1 -0.3 -0.3 -1.5 -2.1 -2.3 -2.8 -1.4 -1.8 -1.4 -1.5 -2.1 -2.6 -3.5 -2.5 -3.4 -3.8 -4.5 -4.0 -1.9
-0.6 0.4 1.0 0.6 0.1 -0.0 -0.7 -1.3 -0.8 -1.1 -0.5 -0.0 -1.9 -3.3 -2.9 -2.0 -1.3 -0.4 -1.3 -2.6 -3.0 -3.1 -4.4 -3.3 -2.2 -2.2 -2.9 -3.4 -2.7 -1.1 -0.1 -1.2 -1.6 -1.5 -1.1 -0.1
0.8 0.9 0.8 0.4 0.2 0.2 0.5 0.2 -0.2 -0.2 -0.3 -0.3 -1.0 -1.3 -1.1 -0.5 -0.2 -0.9 -3.1 -2.5 -2.3 -2.4 -4.9 -4.1 -2.6 -3.2 -4.9 -4.0 -3.1 -2.7 -0.6 -0.4 1.4 1.4 1.1 0.9
-0.2 -0.3 -0.8 -0.5 0.4 0.1 0.1 -0.3 -0.2 0.2 0.6 0.1 2.2 3.5 3.6 3.2 3.2 1.4 1.5 1.9 1.9 1.0 -1.1 -0.5 2.7 1.2 0.4 1.5 0.8 1.6 1.8 1.2 0.9 0.3 0.8 0.4
0.9 1.2 1.6 0.5 0.4 0.9 0.5 0.8 0.6 -0.3 -0.4 0.7 1.5 2.3 1.4 0.8 1.0 1.0 1.7 1.2 1.0 0.5 1.0 1.0 0.9 2.1 2.0 2.2 1.6 0.8 0.5 1.7 1.6 1.7 2.0 1.2
1.3 1.6 1.7 1.9 1.6 1.6 0.3 0.3 -1.0 -1.1 -0.3 0.6 1.1 2.0 1.5 1.2 2.1 1.7 2.0 0.9 0.5 0.8 1.6 1.9 2.0 2.8 3.5 2.9 2.0 0.8 0.6 2.0 1.7 1.6 1.8 1.7
0.7 0.4 0.8 0.3 0.3 -0.9 -0.3 0.1 -0.5 0.1 0.1 1.6 0.5 0.4 0.8 0.6 1.5 2.6 2.0 1.2 0.8 1.0 1.2 1.7 1.8 1.1 1.3 0.8 1.6 1.4 1.5 1.4 1.3 0.9 0.5 0.5
-0.2 -0.1 -0.4 -0.1 -0.4 -1.0 0.5 0.4 -0.8 0.2 1.5 -1.0 -0.9 -0.3 -0.0 0.2 0.2 0.1 -0.3 -2.3 -2.1 -1.0 -1.1 -0.6 0.1 -0.6 -0.4 -0.6 -0.5 -0.1 -0.1 1.7 1.4 2.2 1.3 0.3
0.3 0.2 0.0 0.1 -0.4 -0.4 -0.1 0.9 0.7 0.0 -0.5 -0.8 -0.7 -0.9 -0.4 -0.6 -1.0 -0.9 -0.7 -1.4 -1.3 -0.4 -0.3 -0.4 -0.1 -1.0 -1.4 -1.3 -1.7 -1.8 -0.8 -0.0 0.1 -0.8 -0.2 0.2
-0.7 -0.0 0.4 0.2 -0.5 -0.7 0.5 -0.1 -0.8 -0.8 -0.6 -0.3 -0.0 -2.0 -1.5 -1.5 -2.3 -2.2 -2.2 -2.6 -2.8 -2.9 -2.2 -2.0 -2.0 -1.8 -1.8 -1.8 -1.8 -1.8 -1.1 -1.5 -2.4 -2.1 -2.0 -1.2
-1.9 -2.6 -2.9 -3.5 -2.8 -3.0 -4.1 -3.8 -3.8 -2.9 -2.5 -2.6 -2.6 -2.6 -2.8 -3.1
-3.2 -0.5 -3.2 -2.8 0.7 -3.5 -2.4 -3.0
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 24. SATOB 101 - 400 hPa mean RMS O-B vector differences (ms-1). MARCH 2005
All observations
Values are plotted where greater than 10 obs are present



		5.7	5.6	6.0	6.1	6.6						13.5				7.6	9.1	7.2	6.7				10.0	8.4	7.8										
7.7	7.4	5.4	5.8	7.0	7.4	6.2	5.9	5.9	5.7	5.5	5.6	6.0	5.7	7.3	7.1	6.9	8.1	7.0	7.4	8.7	8.5	7.6	7.9	8.0	7.8	8.5	8.2	5.9							
7.2	7.0	5.7	7.0	6.0	5.9	6.2	5.8	5.8	6.4	6.7	7.2	6.8	7.5	7.3	7.2	6.5	6.9	6.1	7.4	8.8	8.5	9.0	7.4	7.6	7.6	7.0	8.2	8.6	9.3	6.7	9.0	9.0	10.0	9.2	8.2
7.3	6.8	7.0	7.2	5.5	5.5	5.7	6.1	6.7	7.9	8.0	7.9	9.4	11.1	10.3	9.4	8.3	7.2	7.6	8.9	9.5	10.8	11.6	10.4	8.9	8.6	8.6	9.3	8.8	8.3	7.9	8.0	8.5	9.0	8.7	7.7
6.0	5.5	6.1	5.9	5.3	5.5	6.7	7.4	7.3	6.7	6.1	6.2	9.2	9.6	9.1	8.1	8.7	10.8	11.6	11.4	12.5	13.3	13.3	12.0	10.9	11.7	13.7	12.0	10.4	10.9	8.8	8.5	8.7	7.7	6.9	5.9
5.6	5.0	5.4	5.5	5.8	5.9	5.5	5.9	5.7	5.0	4.9	4.9	12.1	13.5	13.6	13.3	12.0	9.7	8.3	7.9	9.2	11.2	9.3	13.1	14.6	11.5	9.2	8.7	7.6	7.2	7.3	5.1	4.4	4.1	4.9	5.7
6.2	6.1	6.9	6.5	6.7	6.1	6.6	6.2	5.8	5.6	5.2	5.3	5.8	6.7	7.3	8.6	7.9	7.4	7.3	6.8	7.1	7.0	8.2	9.2	7.9	7.1	6.8	6.6	5.8	5.8	5.1	4.7	4.7	4.9	5.4	4.9
5.2	5.1	5.4	5.5	5.7	5.6	5.5	7.1	6.5	5.2	5.2	5.0	5.2	5.9	5.9	6.3	7.0	7.3	6.6	6.2	6.4	6.6	7.4	7.2	7.0	7.8	7.6	6.7	5.8	5.3	5.1	4.8	4.6	4.2	4.5	4.6
4.9	5.0	5.0	5.0	4.8	5.0	4.8	6.3	6.4	6.1	5.3	5.6	5.1	5.6	6.0	6.4	8.4	10.2	7.1	5.3	5.1	6.2	5.9	5.8	6.1	6.2	6.0	5.3	6.1	6.3	5.3	5.1	5.0	5.3	5.1	4.8
5.8	5.6	5.6	5.6	5.4	5.4	4.7	5.7	6.3	5.8	5.7	6.3	7.0	7.0	6.5	6.1	6.9	7.4	9.7	9.7	8.5	7.4	7.6	7.1	7.0	7.0	7.2	7.5	7.5	8.3	6.6	6.2	6.5	7.4	7.5	7.0
6.5	5.6	5.9	6.5	6.6	6.0	5.7	5.7	6.0	5.4	5.4	6.1	8.2	9.7	8.6	8.1	7.8	8.0	7.9	8.7	8.8	7.8	8.0	8.9	9.2	9.1	8.3	8.8	9.1	7.8	6.5	5.8	6.3	6.2	5.5	6.6
5.4	4.5	4.0	4.6	5.4	6.6	6.2	5.7	5.7	5.9	6.6	6.4	6.1	9.9	9.3	9.6	9.8	9.2	9.3	9.8	9.9	10.0	9.6	9.2	9.3	9.2	9.2	9.2	9.1	9.8	7.5	7.0	7.3	7.1	6.7	5.4
													6.3	9.5	10.1	10.8	10.7	11.1	12.1	11.9	10.6	9.9	10.0	10.0	10.4	10.5	10.5	7.1							
																7.8	7.6	12.2	8.3			8.3	9.4	7.2	8.0										

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: EXETER

MONTH: Mar 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15, NOAA-16 and NOAA-17.

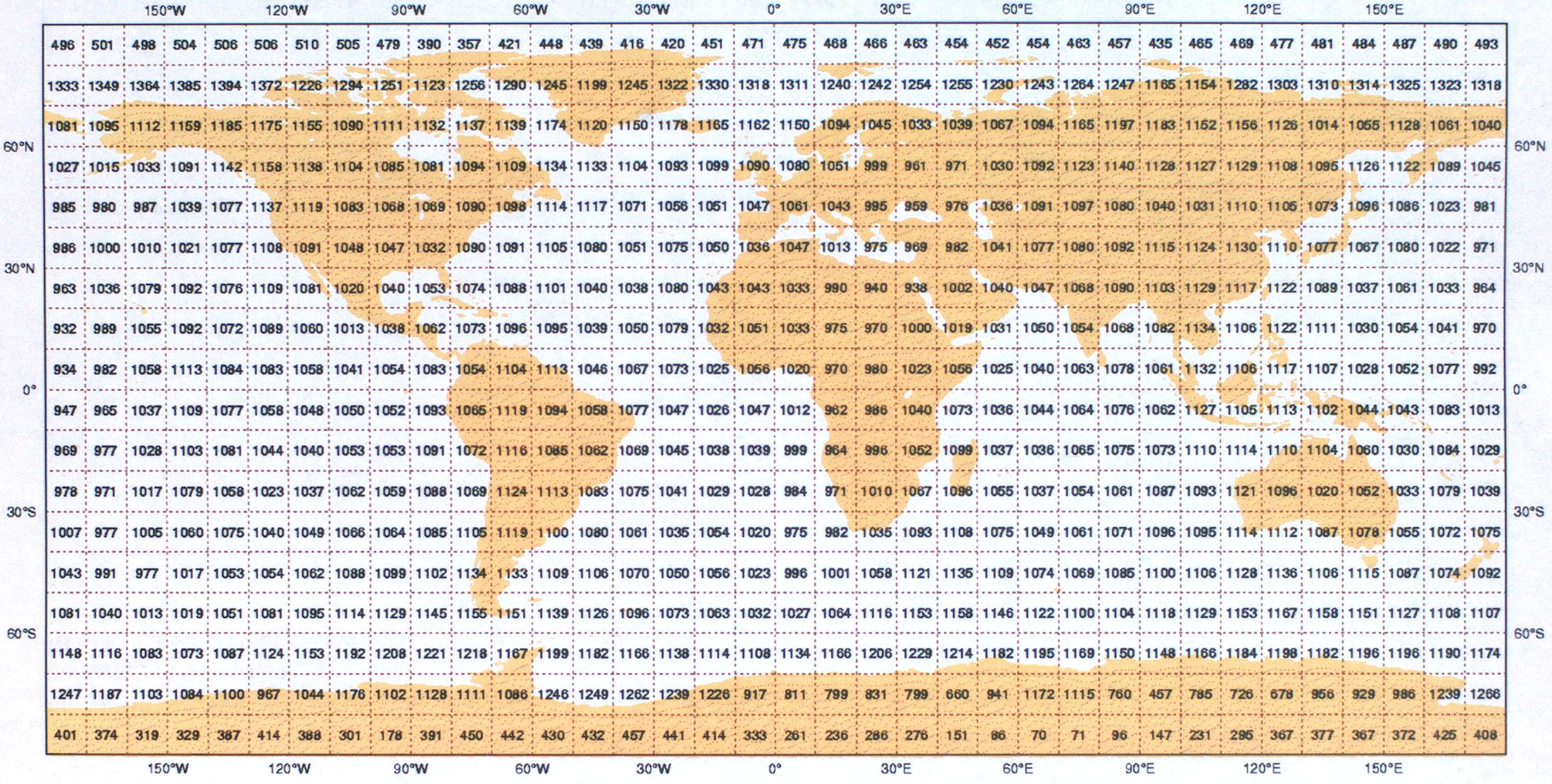
Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)
HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

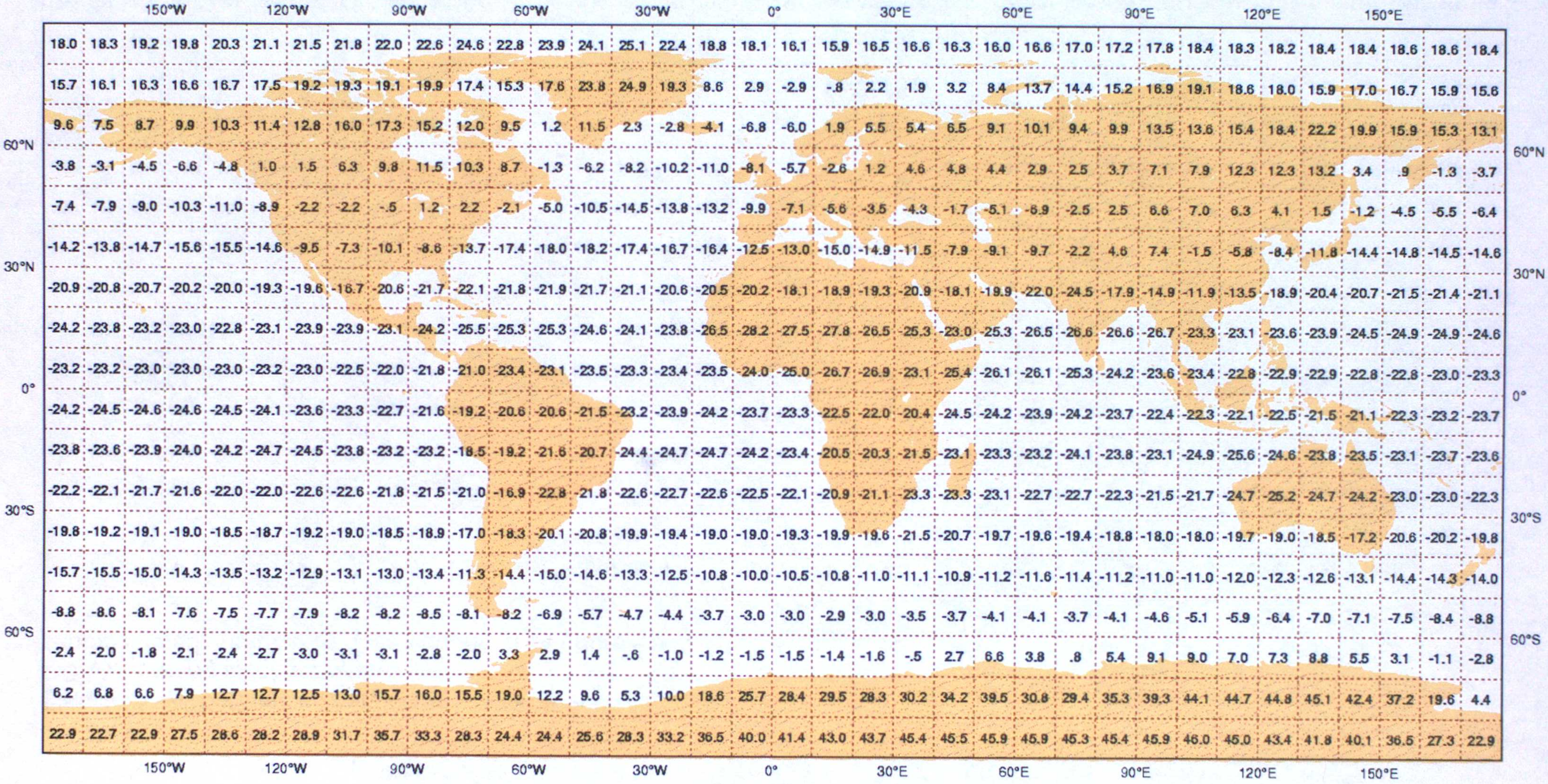
:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. MARCH 2005
NOAA15, using all observations
Global average number of observations in 24 hours = 652327



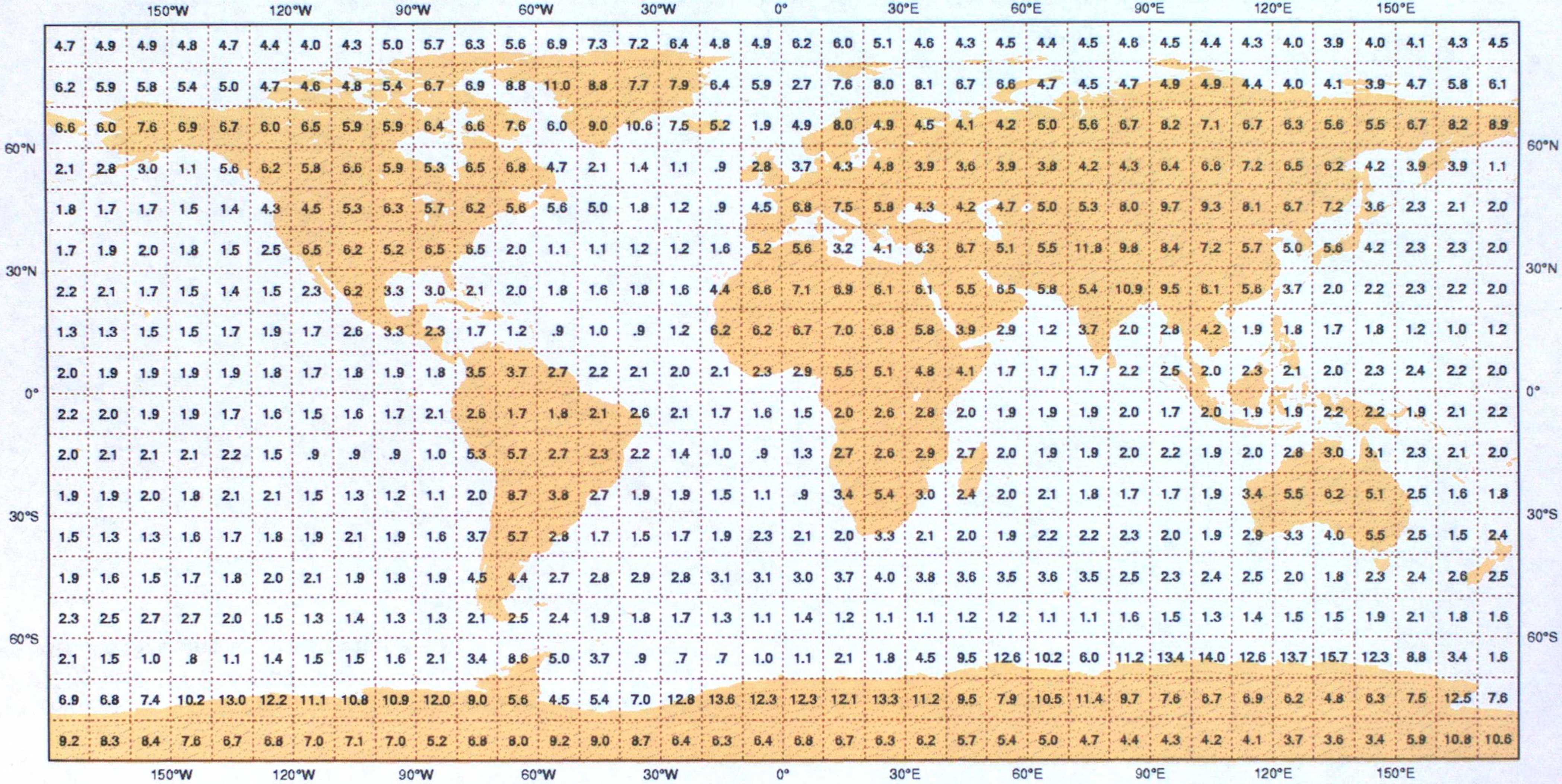
496	501	498	504	506	506	510	505	479	390	357	421	448	439	416	420	451	471	475	468	466	463	454	452	454	463	457	435	465	469	477	481	484	487	490	493
1333	1349	1364	1385	1394	1372	1226	1294	1251	1123	1256	1290	1245	1199	1245	1322	1330	1318	1311	1240	1242	1254	1255	1230	1243	1264	1247	1165	1154	1282	1303	1310	1314	1325	1323	1318
1081	1095	1112	1159	1185	1175	1155	1090	1111	1132	1137	1139	1174	1120	1150	1178	1165	1162	1150	1094	1045	1033	1039	1067	1094	1165	1197	1183	1152	1156	1126	1014	1055	1128	1061	1040
1027	1015	1033	1091	1142	1158	1138	1104	1085	1081	1094	1109	1134	1133	1104	1093	1099	1090	1080	1051	999	961	971	1030	1092	1123	1140	1128	1127	1129	1108	1095	1126	1122	1089	1045
985	980	987	1039	1077	1137	1119	1083	1068	1069	1090	1098	1114	1117	1071	1056	1051	1047	1061	1043	995	959	976	1036	1091	1097	1080	1040	1031	1110	1105	1073	1096	1086	1023	981
986	1000	1010	1021	1077	1108	1091	1048	1047	1032	1090	1091	1105	1080	1051	1075	1050	1036	1047	1013	975	969	982	1041	1077	1080	1092	1115	1124	1130	1110	1077	1067	1080	1022	971
963	1036	1079	1092	1076	1109	1081	1020	1040	1053	1074	1088	1101	1040	1038	1080	1043	1043	1033	990	940	938	1002	1040	1047	1068	1090	1103	1129	1117	1122	1089	1037	1061	1033	964
932	989	1055	1092	1072	1089	1060	1013	1038	1062	1073	1096	1095	1039	1050	1079	1032	1051	1033	975	970	1000	1019	1031	1050	1054	1068	1082	1134	1106	1122	1111	1030	1054	1041	970
934	982	1058	1113	1084	1083	1058	1041	1054	1083	1054	1104	1113	1046	1067	1073	1025	1056	1020	970	980	1023	1056	1025	1040	1063	1078	1061	1132	1106	1117	1107	1028	1052	1077	992
947	965	1037	1109	1077	1058	1048	1050	1052	1093	1065	1119	1094	1058	1077	1047	1026	1047	1012	962	986	1040	1073	1036	1044	1064	1076	1062	1127	1105	1113	1102	1044	1043	1083	1013
969	977	1028	1103	1081	1044	1040	1053	1053	1091	1072	1116	1085	1062	1069	1045	1038	1039	999	964	996	1052	1099	1037	1036	1065	1075	1073	1110	1114	1110	1104	1060	1030	1084	1029
978	971	1017	1079	1058	1023	1037	1062	1059	1088	1069	1124	1113	1083	1075	1041	1029	1028	984	971	1010	1067	1096	1055	1037	1054	1061	1087	1093	1121	1096	1020	1052	1033	1079	1039
1007	977	1005	1060	1075	1040	1049	1066	1064	1085	1105	1119	1100	1080	1061	1035	1054	1020	975	982	1035	1093	1108	1075	1049	1061	1071	1096	1095	1114	1112	1087	1078	1055	1072	1075
1043	991	977	1017	1053	1054	1062	1088	1099	1102	1134	1133	1109	1106	1070	1050	1056	1023	996	1001	1058	1121	1135	1109	1074	1069	1085	1100	1106	1128	1136	1106	1115	1087	1074	1092
1081	1040	1013	1019	1051	1081	1095	1114	1129	1145	1155	1151	1139	1126	1096	1073	1063	1032	1027	1064	1116	1153	1158	1146	1122	1100	1104	1118	1129	1153	1167	1158	1151	1127	1108	1107
1148	1116	1083	1073	1087	1124	1153	1192	1208	1221	1218	1167	1199	1182	1166	1138	1114	1108	1134	1166	1206	1229	1214	1182	1195	1169	1150	1148	1166	1184	1198	1182	1196	1196	1190	1174
1247	1187	1103	1084	1100	967	1044	1176	1102	1128	1111	1086	1246	1249	1262	1239	1226	917	811	799	831	799	660	941	1172	1115	760	457	785	726	678	956	929	986	1239	1266
401	374	319	329	387	414	388	301	178	391	450	442	430	432	457	441	414	333	261	236	286	276	151	86	70	71	96	147	231	295	367	377	367	372	425	408

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS8 (Surface)
NOAA15, using all observations



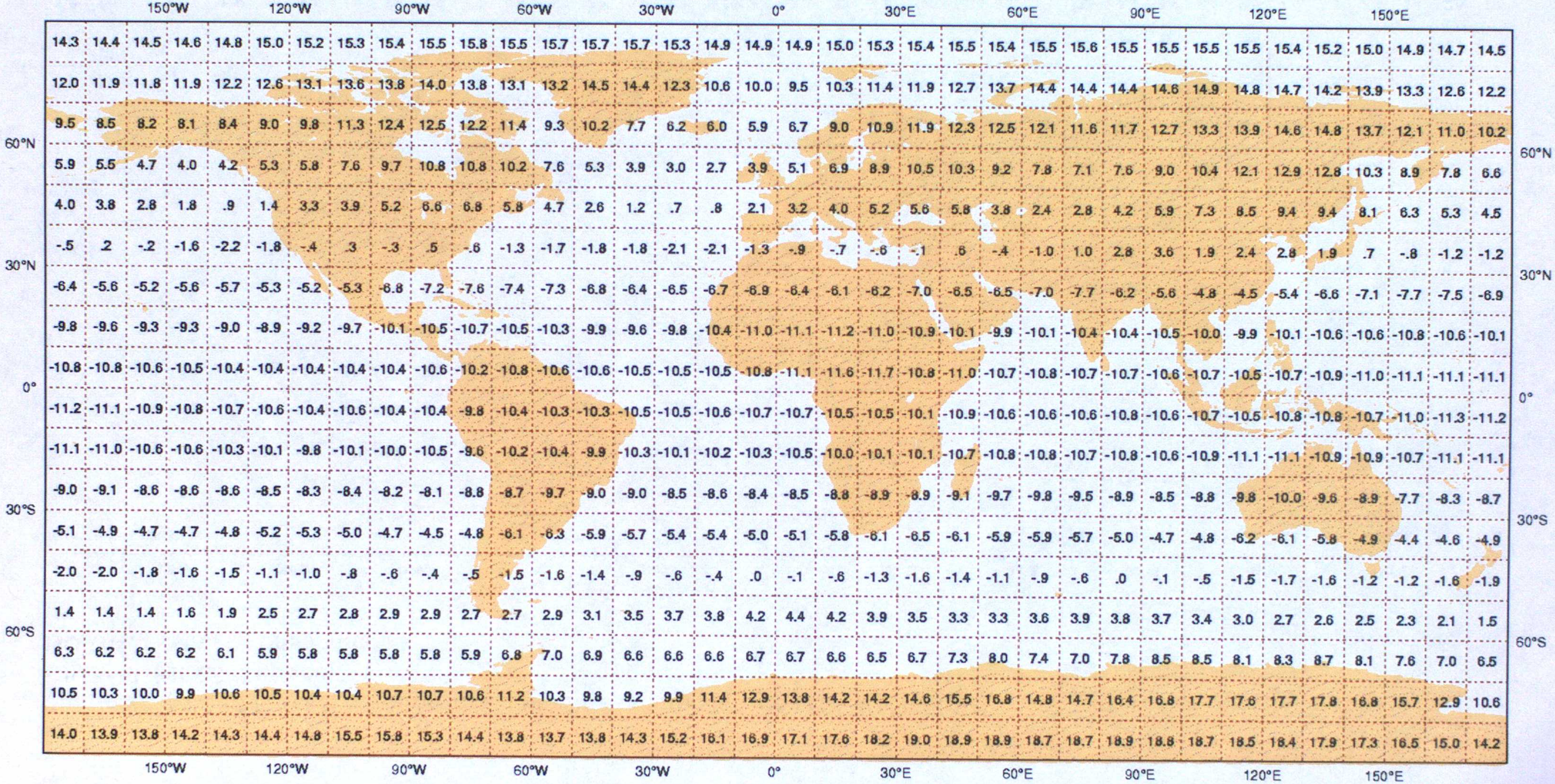
18.0	18.3	19.2	19.8	20.3	21.1	21.5	21.8	22.0	22.6	24.6	22.8	23.9	24.1	25.1	22.4	18.8	18.1	16.1	15.9	16.5	16.6	16.3	16.0	16.6	17.0	17.2	17.8	18.4	18.3	18.2	18.4	18.4	18.6	18.6	18.4
15.7	16.1	16.3	16.6	16.7	17.5	19.2	19.3	19.1	19.9	17.4	15.3	17.6	23.8	24.9	19.3	8.6	2.9	-2.9	-.8	2.2	1.9	3.2	8.4	13.7	14.4	15.2	16.9	19.1	18.6	18.0	15.9	17.0	16.7	15.9	15.6
9.6	7.5	8.7	9.9	10.3	11.4	12.8	16.0	17.3	15.2	12.0	9.5	1.2	11.5	2.3	-2.8	-4.1	-6.8	-6.0	1.9	5.5	5.4	6.5	9.1	10.1	9.4	9.9	13.5	13.6	15.4	18.4	22.2	19.9	15.9	15.3	13.1
-3.8	-3.1	-4.5	-6.6	-4.8	1.0	1.5	6.3	9.8	11.5	10.3	8.7	-1.3	-6.2	-8.2	-10.2	-11.0	-8.1	-5.7	-2.6	1.2	4.6	4.8	4.4	2.9	2.5	3.7	7.1	7.9	12.3	12.3	13.2	3.4	.9	-1.3	-3.7
-7.4	-7.9	-9.0	-10.3	-11.0	-8.9	-2.2	-2.2	-.5	1.2	2.2	-2.1	-5.0	-10.5	-14.5	-13.8	-13.2	-9.9	-7.1	-5.6	-3.5	-4.3	-1.7	-5.1	-6.9	-2.5	2.5	6.6	7.0	6.3	4.1	1.5	-1.2	-4.5	-5.5	-6.4
-14.2	-13.8	-14.7	-15.6	-15.5	-14.6	-9.5	-7.3	-10.1	-8.6	-13.7	-17.4	-18.0	-18.2	-17.4	-16.7	-16.4	-12.5	-13.0	-15.0	-14.9	-11.5	-7.9	-9.1	-9.7	-2.2	4.6	7.4	-1.5	-5.8	-8.4	-11.8	-14.4	-14.8	-14.5	-14.6
-20.9	-20.8	-20.7	-20.2	-20.0	-19.3	-19.6	-16.7	-20.6	-21.7	-22.1	-21.8	-21.9	-21.7	-21.1	-20.6	-20.5	-20.2	-18.1	-18.9	-19.3	-20.9	-18.1	-19.9	-22.0	-24.5	-17.9	-14.9	-11.9	-13.5	-18.9	-20.4	-20.7	-21.5	-21.4	-21.1
-24.2	-23.8	-23.2	-23.0	-22.8	-23.1	-23.9	-23.9	-23.1	-24.2	-25.5	-25.3	-25.3	-24.6	-24.1	-23.8	-26.5	-28.2	-27.5	-27.8	-26.5	-25.3	-23.0	-25.3	-26.5	-26.6	-26.6	-26.7	-23.3	-23.1	-23.6	-23.9	-24.5	-24.9	-24.9	-24.6
-23.2	-23.2	-23.0	-23.0	-23.0	-23.2	-23.0	-22.5	-22.0	-21.8	-21.0	-23.4	-23.1	-23.5	-23.3	-23.4	-23.5	-24.0	-25.0	-26.7	-26.9	-23.1	-25.4	-26.1	-26.1	-25.3	-24.2	-23.6	-23.4	-22.8	-22.9	-22.9	-22.8	-22.8	-23.0	-23.3
-24.2	-24.5	-24.6	-24.6	-24.5	-24.1	-23.6	-23.3	-22.7	-21.6	-19.2	-20.6	-20.6	-21.5	-23.2	-23.9	-24.2	-23.7	-23.3	-22.5	-22.0	-20.4	-24.5	-24.2	-23.9	-24.2	-23.7	-22.4	-22.3	-22.1	-22.5	-21.5	-21.1	-22.3	-23.2	-23.7
-23.8	-23.6	-23.9	-24.0	-24.2	-24.7	-24.5	-23.8	-23.2	-23.2	-18.5	-19.2	-21.6	-20.7	-24.4	-24.7	-24.7	-24.2	-23.4	-20.5	-20.3	-21.5	-23.1	-23.3	-23.2	-24.1	-23.8	-23.1	-24.9	-25.6	-24.6	-23.8	-23.5	-23.1	-23.7	-23.6
-22.2	-22.1	-21.7	-21.6	-22.0	-22.0	-22.6	-22.6	-21.8	-21.5	-21.0	-16.9	-22.8	-21.8	-22.6	-22.7	-22.6	-22.5	-22.1	-20.9	-21.1	-23.3	-23.3	-23.1	-22.7	-22.7	-22.3	-21.5	-21.7	-24.7	-25.2	-24.7	-24.2	-23.0	-23.0	-22.3
-19.8	-19.2	-19.1	-19.0	-18.5	-18.7	-19.2	-19.0	-18.5	-18.9	-17.0	-18.3	-20.1	-20.8	-19.9	-19.4	-19.0	-19.0	-19.3	-19.9	-19.6	-21.5	-20.7	-19.7	-19.6	-19.4	-18.8	-18.0	-18.0	-19.7	-19.0	-18.5	-17.2	-20.6	-20.2	-19.8
-15.7	-15.5	-15.0	-14.3	-13.5	-13.2	-12.9	-13.1	-13.0	-13.4	-11.3	-14.4	-15.0	-14.6	-13.3	-12.5	-10.8	-10.0	-10.5	-10.8	-11.0	-11.1	-10.9	-11.2	-11.6	-11.4	-11.2	-11.0	-11.0	-12.0	-12.3	-12.6	-13.1	-14.4	-14.3	-14.0
-8.8	-8.6	-8.1	-7.6	-7.5	-7.7	-7.9	-8.2	-8.2	-8.5	-8.1	-8.2	-6.9	-5.7	-4.7	-4.4	-3.7	-3.0	-3.0	-2.9	-3.0	-3.5	-3.7	-4.1	-4.1	-3.7	-4.1	-4.6	-5.1	-5.9	-6.4	-7.0	-7.1	-7.5	-8.4	-8.8
-2.4	-2.0	-1.8	-2.1	-2.4	-2.7	-3.0	-3.1	-3.1	-2.8	-2.0	3.3	2.9	1.4	-.6	-1.0	-1.2	-1.5	-1.5	-1.4	-1.6	-.5	2.7	6.6	3.8	.8	5.4	9.1	9.0	7.0	7.3	8.8	5.5	3.1	-1.1	-2.8
6.2	6.8	6.6	7.9	12.7	12.7	12.5	13.0	15.7	16.0	15.5	19.0	12.2	9.6	5.3	10.0	18.6	25.7	28.4	29.5	28.3	30.2	34.2	39.5	30.8	29.4	35.3	39.3	44.1	44.7	44.8	45.1	42.4	37.2	19.6	4.4
22.9	22.7	22.9	27.5	28.6	28.2	28.9	31.7	35.7	33.3	28.3	24.4	24.4	25.6	28.3	33.2	36.5	40.0	41.4	43.0	43.7	45.4	45.5	45.9	45.9	45.3	45.4	45.9	46.0	45.0	43.4	41.8	40.1	36.5	27.3	22.9

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS8 (Surface)
NOAA15, using all observations



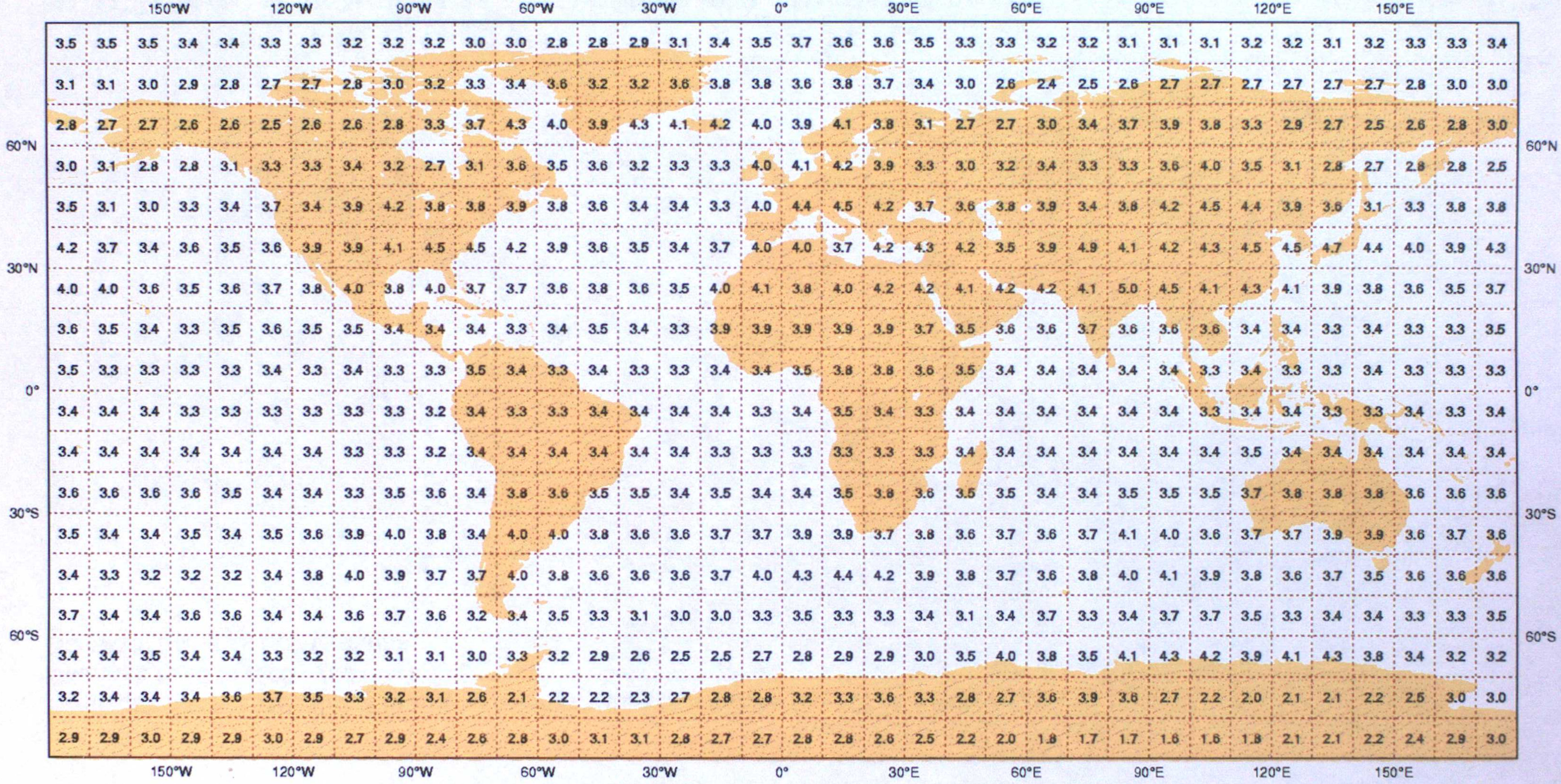
4.7	4.9	4.9	4.8	4.7	4.4	4.0	4.3	5.0	5.7	6.3	5.6	6.9	7.3	7.2	6.4	4.8	4.9	6.2	6.0	5.1	4.6	4.3	4.5	4.4	4.5	4.6	4.5	4.4	4.3	4.0	3.9	4.0	4.1	4.3	4.5
6.2	5.9	5.8	5.4	5.0	4.7	4.6	4.8	5.4	6.7	6.9	8.8	11.0	8.8	7.7	7.9	6.4	5.9	2.7	7.6	8.0	8.1	6.7	6.6	4.7	4.5	4.7	4.9	4.9	4.4	4.0	4.1	3.9	4.7	5.8	6.1
6.6	6.0	7.6	6.9	6.7	6.0	6.5	5.9	5.9	6.4	6.6	7.6	6.0	9.0	10.6	7.5	5.2	1.9	4.9	8.0	4.9	4.5	4.1	4.2	5.0	5.6	6.7	8.2	7.1	6.7	6.3	5.6	5.5	6.7	8.2	8.9
2.1	2.8	3.0	1.1	5.6	6.2	5.8	6.6	5.9	5.3	6.5	6.8	4.7	2.1	1.4	1.1	.9	2.8	3.7	4.3	4.8	3.9	3.6	3.9	3.8	4.2	4.3	6.4	6.6	7.2	6.5	6.2	4.2	3.9	3.9	1.1
1.8	1.7	1.7	1.5	1.4	4.3	4.5	5.3	6.3	5.7	6.2	5.6	5.6	5.0	1.8	1.2	.9	4.5	6.8	7.5	5.8	4.3	4.2	4.7	5.0	5.3	8.0	9.7	9.3	8.1	6.7	7.2	3.6	2.3	2.1	2.0
1.7	1.9	2.0	1.8	1.5	2.5	6.5	6.2	5.2	6.5	6.5	2.0	1.1	1.1	1.2	1.2	1.6	5.2	5.6	3.2	4.1	6.3	6.7	5.1	5.5	11.8	9.8	8.4	7.2	5.7	5.0	5.6	4.2	2.3	2.3	2.0
2.2	2.1	1.7	1.5	1.4	1.5	2.3	6.2	3.3	3.0	2.1	2.0	1.8	1.6	1.8	1.6	4.4	6.6	7.1	6.9	6.1	6.1	5.5	6.5	5.8	5.4	10.9	9.5	6.1	5.6	3.7	2.0	2.2	2.3	2.2	2.0
1.3	1.3	1.5	1.5	1.7	1.9	1.7	2.6	3.3	2.3	1.7	1.2	.9	1.0	.9	1.2	6.2	6.2	6.7	7.0	6.8	5.8	3.9	2.9	1.2	3.7	2.0	2.8	4.2	1.9	1.8	1.7	1.8	1.2	1.0	1.2
2.0	1.9	1.9	1.9	1.9	1.8	1.7	1.8	1.9	1.8	3.5	3.7	2.7	2.2	2.1	2.0	2.1	2.3	2.9	5.5	5.1	4.8	4.1	1.7	1.7	1.7	2.2	2.5	2.0	2.3	2.1	2.0	2.3	2.4	2.2	2.0
2.2	2.0	1.9	1.9	1.7	1.6	1.5	1.6	1.7	2.1	2.6	1.7	1.8	2.1	2.6	2.1	1.7	1.6	1.5	2.0	2.6	2.8	2.0	1.9	1.9	1.9	2.0	1.7	2.0	1.9	1.9	2.2	2.2	1.9	2.1	2.2
2.0	2.1	2.1	2.1	2.2	1.5	.9	.9	.9	1.0	5.3	5.7	2.7	2.3	2.2	1.4	1.0	.9	1.3	2.7	2.6	2.9	2.7	2.0	1.9	1.9	2.0	2.2	1.9	2.0	2.8	3.0	3.1	2.3	2.1	2.0
1.9	1.9	2.0	1.8	2.1	2.1	1.5	1.3	1.2	1.1	2.0	8.7	3.8	2.7	1.9	1.9	1.5	1.1	.9	3.4	5.4	3.0	2.4	2.0	2.1	1.8	1.7	1.7	1.9	3.4	5.5	6.2	5.1	2.5	1.6	1.8
1.5	1.3	1.3	1.6	1.7	1.8	1.9	2.1	1.9	1.6	3.7	5.7	2.8	1.7	1.5	1.7	1.9	2.3	2.1	2.0	3.3	2.1	2.0	1.9	2.2	2.2	2.3	2.0	1.9	2.9	3.3	4.0	5.5	2.5	1.5	2.4
1.9	1.6	1.5	1.7	1.8	2.0	2.1	1.9	1.8	1.9	4.5	4.4	2.7	2.8	2.9	2.8	3.1	3.1	3.0	3.7	4.0	3.8	3.6	3.5	3.6	3.5	2.5	2.3	2.4	2.5	2.0	1.8	2.3	2.4	2.6	2.5
2.3	2.5	2.7	2.7	2.0	1.5	1.3	1.4	1.3	1.3	2.1	2.5	2.4	1.9	1.8	1.7	1.3	1.1	1.4	1.2	1.1	1.1	1.2	1.2	1.1	1.1	1.6	1.5	1.3	1.4	1.5	1.5	1.9	2.1	1.8	1.6
2.1	1.5	1.0	.8	1.1	1.4	1.5	1.5	1.6	2.1	3.4	8.6	5.0	3.7	.9	.7	.7	1.0	1.1	2.1	1.8	4.5	9.5	12.6	10.2	6.0	11.2	13.4	14.0	12.6	13.7	15.7	12.3	8.8	3.4	1.6
6.9	6.8	7.4	10.2	13.0	12.2	11.1	10.8	10.9	12.0	9.0	5.6	4.5	5.4	7.0	12.8	13.6	12.3	12.3	12.1	13.3	11.2	9.5	7.9	10.5	11.4	9.7	7.6	6.7	6.9	6.2	4.8	6.3	7.5	12.5	7.6
9.2	8.3	8.4	7.6	6.7	6.8	7.0	7.1	7.0	5.2	6.8	8.0	9.2	9.0	8.7	6.4	6.3	6.4	6.8	6.7	6.3	6.2	5.7	5.4	5.0	4.7	4.4	4.3	4.2	4.1	3.7	3.6	3.4	5.9	10.8	10.6

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



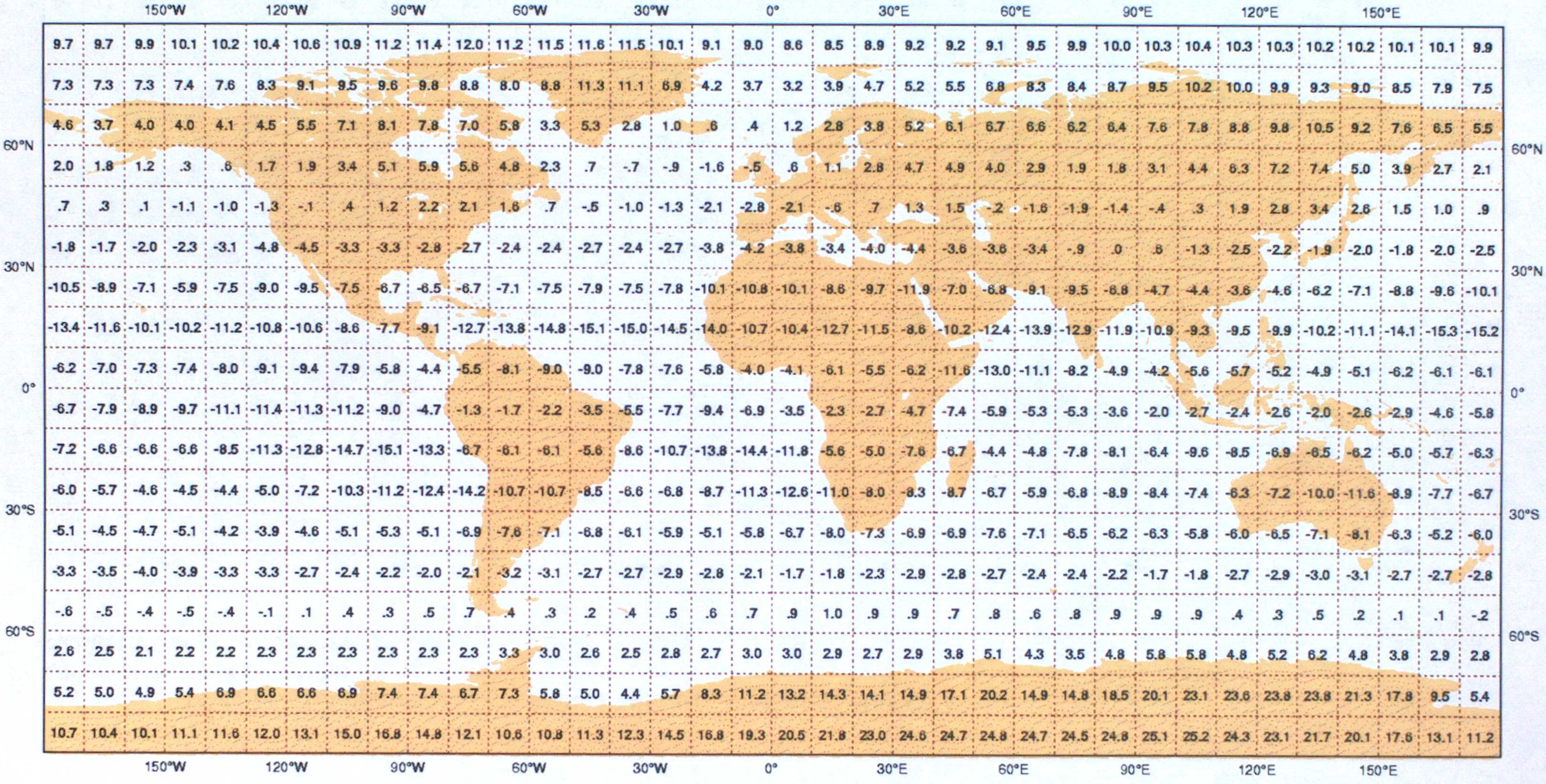
14.3	14.4	14.5	14.6	14.8	15.0	15.2	15.3	15.4	15.5	15.8	15.5	15.7	15.7	15.7	15.3	14.9	14.9	14.9	15.0	15.3	15.4	15.5	15.4	15.5	15.6	15.5	15.5	15.5	15.5	15.4	15.2	15.0	14.9	14.7	14.5
12.0	11.9	11.8	11.9	12.2	12.6	13.1	13.6	13.8	14.0	13.8	13.1	13.2	14.5	14.4	12.3	10.6	10.0	9.5	10.3	11.4	11.9	12.7	13.7	14.4	14.4	14.4	14.6	14.9	14.8	14.7	14.2	13.9	13.3	12.6	12.2
9.5	8.5	8.2	8.1	8.4	9.0	9.8	11.3	12.4	12.5	12.2	11.4	9.3	10.2	7.7	6.2	6.0	5.9	6.7	9.0	10.9	11.9	12.3	12.5	12.1	11.6	11.7	12.7	13.3	13.9	14.6	14.8	13.7	12.1	11.0	10.2
5.9	5.5	4.7	4.0	4.2	5.3	5.8	7.6	9.7	10.8	10.8	10.2	7.6	5.3	3.9	3.0	2.7	3.9	5.1	6.9	8.9	10.5	10.3	9.2	7.8	7.1	7.6	9.0	10.4	12.1	12.9	12.8	10.3	8.9	7.8	6.6
4.0	3.8	2.8	1.8	.9	1.4	3.3	3.9	5.2	6.6	6.8	5.8	4.7	2.6	1.2	.7	.8	2.1	3.2	4.0	5.2	5.6	5.8	3.8	2.4	2.8	4.2	5.9	7.3	8.5	9.4	9.4	8.1	6.3	5.3	4.5
-.5	.2	-.2	-1.6	-2.2	-1.8	-.4	.3	-.3	.5	-.6	-1.3	-1.7	-1.8	-1.8	-2.1	-2.1	-1.3	-.9	-.7	-.6	-.1	.6	-.4	-1.0	1.0	2.8	3.6	1.9	2.4	2.8	1.9	.7	-.8	-1.2	-1.2
-6.4	-5.6	-5.2	-5.6	-5.7	-5.3	-5.2	-5.3	-6.8	-7.2	-7.6	-7.4	-7.3	-6.8	-6.4	-6.5	-6.7	-6.9	-6.4	-6.1	-6.2	-7.0	-6.5	-6.5	-7.0	-7.7	-6.2	-5.6	-4.8	-4.5	-5.4	-6.6	-7.1	-7.7	-7.5	-6.9
-9.8	-9.6	-9.3	-9.3	-9.0	-8.9	-9.2	-9.7	-10.1	-10.5	-10.7	-10.5	-10.3	-9.9	-9.6	-9.8	-10.4	-11.0	-11.1	-11.2	-11.0	-10.9	-10.1	-9.9	-10.1	-10.4	-10.4	-10.5	-10.0	-9.9	-10.1	-10.6	-10.6	-10.8	-10.6	-10.1
-10.8	-10.8	-10.6	-10.5	-10.4	-10.4	-10.4	-10.4	-10.4	-10.6	-10.2	-10.8	-10.6	-10.6	-10.5	-10.5	-10.5	-10.8	-11.1	-11.6	-11.7	-10.8	-11.0	-10.7	-10.8	-10.7	-10.7	-10.6	-10.7	-10.5	-10.7	-10.9	-11.0	-11.1	-11.1	-11.1
-11.2	-11.1	-10.9	-10.8	-10.7	-10.6	-10.4	-10.6	-10.4	-10.4	-9.8	-10.4	-10.3	-10.3	-10.5	-10.5	-10.6	-10.7	-10.7	-10.5	-10.5	-10.1	-10.9	-10.6	-10.6	-10.6	-10.8	-10.6	-10.7	-10.5	-10.8	-10.8	-10.7	-11.0	-11.3	-11.2
-11.1	-11.0	-10.6	-10.6	-10.3	-10.1	-9.8	-10.1	-10.0	-10.5	-9.6	-10.2	-10.4	-9.9	-10.3	-10.1	-10.2	-10.3	-10.5	-10.0	-10.1	-10.1	-10.7	-10.8	-10.8	-10.7	-10.8	-10.6	-10.9	-11.1	-11.1	-10.9	-10.9	-10.7	-11.1	-11.1
-9.0	-9.1	-8.6	-8.6	-8.6	-8.5	-8.3	-8.4	-8.2	-8.1	-8.8	-8.7	-9.7	-9.0	-9.0	-8.5	-8.6	-8.4	-8.5	-8.8	-8.9	-8.9	-9.1	-9.7	-9.8	-9.5	-8.9	-8.5	-8.8	-9.8	-10.0	-9.6	-8.9	-7.7	-8.3	-8.7
-5.1	-4.9	-4.7	-4.7	-4.8	-5.2	-5.3	-5.0	-4.7	-4.5	-4.8	-6.1	-6.3	-5.9	-5.7	-5.4	-5.4	-5.0	-5.1	-5.8	-6.1	-6.5	-6.1	-5.9	-5.9	-5.7	-5.0	-4.7	-4.8	-6.2	-6.1	-5.8	-4.9	-4.4	-4.6	-4.9
-2.0	-2.0	-1.8	-1.6	-1.5	-1.1	-1.0	-.8	-.6	-.4	-.5	-1.5	-1.6	-1.4	-.9	-.6	-.4	.0	-.1	-.6	-1.3	-1.6	-1.4	-1.1	-.9	-.6	.0	-.1	-.5	-1.5	-1.7	-1.6	-1.2	-1.2	-1.6	-1.9
1.4	1.4	1.4	1.6	1.9	2.5	2.7	2.8	2.9	2.9	2.7	2.7	2.9	3.1	3.5	3.7	3.8	4.2	4.4	4.2	3.9	3.5	3.3	3.3	3.6	3.9	3.8	3.7	3.4	3.0	2.7	2.6	2.5	2.3	2.1	1.5
6.3	6.2	6.2	6.2	6.1	5.9	5.8	5.8	5.8	5.8	5.9	6.8	7.0	6.9	6.6	6.6	6.6	6.7	6.7	6.6	6.5	6.7	7.3	8.0	7.4	7.0	7.8	8.5	8.5	8.1	8.3	8.7	8.1	7.6	7.0	6.5
10.5	10.3	10.0	9.9	10.6	10.5	10.4	10.4	10.7	10.7	10.6	11.2	10.3	9.8	9.2	9.9	11.4	12.9	13.8	14.2	14.2	14.6	15.5	16.8	14.8	14.7	16.4	16.8	17.7	17.6	17.7	17.8	16.8	15.7	12.9	10.6
14.0	13.9	13.8	14.2	14.3	14.4	14.8	15.5	15.8	15.3	14.4	13.8	13.7	13.8	14.3	15.2	16.1	16.9	17.1	17.6	18.2	19.0	18.9	18.9	18.7	18.7	18.9	18.8	18.7	18.5	18.4	17.9	17.3	16.5	15.0	14.2

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



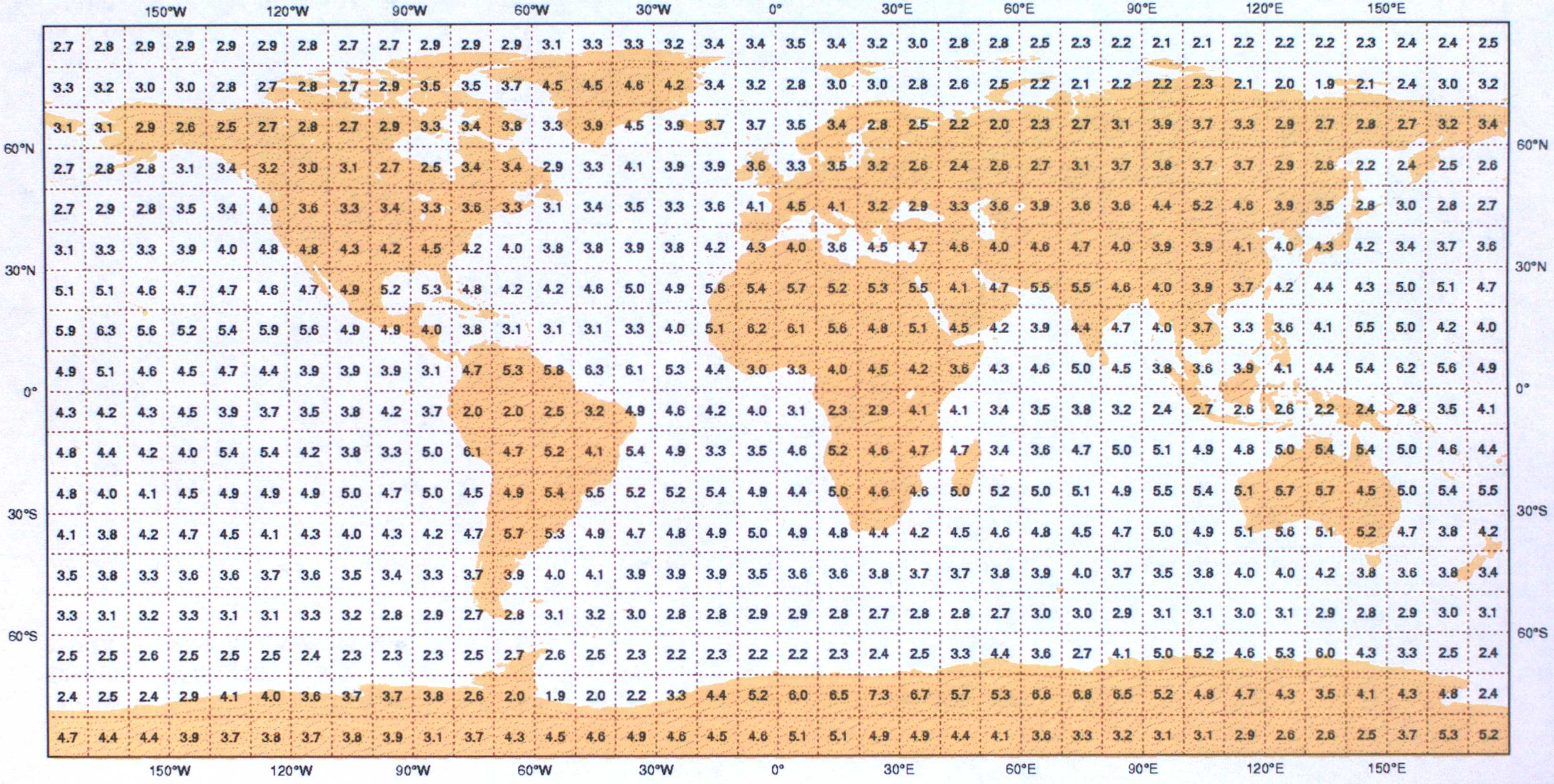
3.5	3.5	3.5	3.4	3.4	3.3	3.3	3.2	3.2	3.2	3.0	3.0	2.8	2.8	2.9	3.1	3.4	3.5	3.7	3.6	3.6	3.5	3.3	3.3	3.2	3.2	3.1	3.1	3.1	3.2	3.2	3.1	3.2	3.3	3.3	3.4
3.1	3.1	3.0	2.9	2.8	2.7	2.7	2.8	3.0	3.2	3.3	3.4	3.6	3.2	3.2	3.6	3.8	3.8	3.6	3.8	3.7	3.4	3.0	2.6	2.4	2.5	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.8	3.0	3.0
2.8	2.7	2.7	2.6	2.6	2.5	2.6	2.6	2.8	3.3	3.7	4.3	4.0	3.9	4.3	4.1	4.2	4.0	3.9	4.1	3.8	3.1	2.7	2.7	3.0	3.4	3.7	3.9	3.8	3.3	2.9	2.7	2.5	2.6	2.8	3.0
3.0	3.1	2.8	2.8	3.1	3.3	3.3	3.4	3.2	2.7	3.1	3.6	3.5	3.6	3.2	3.3	3.3	4.0	4.1	4.2	3.9	3.3	3.0	3.2	3.4	3.3	3.3	3.6	4.0	3.5	3.1	2.8	2.7	2.8	2.8	2.5
3.5	3.1	3.0	3.3	3.4	3.7	3.4	3.9	4.2	3.8	3.8	3.9	3.8	3.6	3.4	3.4	3.3	4.0	4.4	4.5	4.2	3.7	3.6	3.8	3.9	3.4	3.8	4.2	4.5	4.4	3.9	3.6	3.1	3.3	3.8	3.8
4.2	3.7	3.4	3.6	3.5	3.6	3.9	3.9	4.1	4.5	4.5	4.2	3.9	3.6	3.5	3.4	3.7	4.0	4.0	3.7	4.2	4.3	4.2	3.5	3.9	4.9	4.1	4.2	4.3	4.5	4.5	4.7	4.4	4.0	3.9	4.3
4.0	4.0	3.6	3.5	3.6	3.7	3.8	4.0	3.8	4.0	3.7	3.7	3.6	3.8	3.6	3.5	4.0	4.1	3.8	4.0	4.2	4.2	4.1	4.2	4.2	4.1	5.0	4.5	4.1	4.3	4.1	3.9	3.8	3.6	3.5	3.7
3.6	3.5	3.4	3.3	3.5	3.6	3.5	3.5	3.4	3.4	3.4	3.3	3.4	3.5	3.4	3.3	3.9	3.9	3.9	3.9	3.9	3.7	3.5	3.6	3.6	3.7	3.6	3.6	3.6	3.4	3.4	3.3	3.4	3.3	3.3	3.5
3.5	3.3	3.3	3.3	3.3	3.4	3.3	3.4	3.3	3.3	3.5	3.4	3.3	3.4	3.3	3.3	3.4	3.4	3.5	3.8	3.8	3.6	3.5	3.4	3.4	3.4	3.4	3.4	3.3	3.4	3.3	3.3	3.4	3.3	3.3	3.3
3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.4	3.3	3.3	3.4	3.4	3.4	3.4	3.3	3.4	3.5	3.4	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.4	3.4	3.3	3.3	3.4	3.3	3.4
3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.2	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.4	3.4	3.4
3.6	3.6	3.6	3.6	3.5	3.4	3.4	3.3	3.5	3.6	3.4	3.8	3.6	3.5	3.5	3.4	3.5	3.4	3.4	3.5	3.8	3.6	3.5	3.5	3.4	3.4	3.5	3.5	3.5	3.7	3.8	3.8	3.8	3.6	3.6	3.6
3.5	3.4	3.4	3.5	3.4	3.5	3.6	3.9	4.0	3.8	3.4	4.0	4.0	3.8	3.6	3.6	3.7	3.7	3.9	3.9	3.7	3.8	3.6	3.7	3.6	3.7	4.1	4.0	3.6	3.7	3.7	3.9	3.9	3.6	3.7	3.6
3.4	3.3	3.2	3.2	3.2	3.4	3.8	4.0	3.9	3.7	3.7	4.0	3.8	3.6	3.6	3.6	3.7	4.0	4.3	4.4	4.2	3.9	3.8	3.7	3.6	3.8	4.0	4.1	3.9	3.8	3.6	3.7	3.5	3.6	3.6	3.6
3.7	3.4	3.4	3.6	3.6	3.4	3.4	3.6	3.7	3.6	3.2	3.4	3.5	3.3	3.1	3.0	3.0	3.3	3.5	3.3	3.3	3.4	3.1	3.4	3.7	3.3	3.4	3.7	3.7	3.5	3.3	3.4	3.4	3.3	3.3	3.5
3.4	3.4	3.5	3.4	3.4	3.3	3.2	3.2	3.1	3.1	3.0	3.3	3.2	2.9	2.6	2.5	2.5	2.7	2.8	2.9	2.9	3.0	3.5	4.0	3.8	3.5	4.1	4.3	4.2	3.9	4.1	4.3	3.8	3.4	3.2	3.2
3.2	3.4	3.4	3.4	3.6	3.7	3.5	3.3	3.2	3.1	2.6	2.1	2.2	2.2	2.3	2.7	2.8	2.8	3.2	3.3	3.6	3.3	2.8	2.7	3.6	3.9	3.6	2.7	2.2	2.0	2.1	2.1	2.2	2.5	3.0	3.0
2.9	2.9	3.0	2.9	2.9	3.0	2.9	2.7	2.9	2.4	2.6	2.8	3.0	3.1	3.1	2.8	2.7	2.7	2.8	2.8	2.6	2.5	2.2	2.0	1.8	1.7	1.7	1.6	1.6	1.8	2.1	2.1	2.2	2.4	2.9	3.0

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



9.7	9.7	9.9	10.1	10.2	10.4	10.6	10.9	11.2	11.4	12.0	11.2	11.5	11.6	11.5	10.1	9.1	9.0	8.6	8.5	8.9	9.2	9.2	9.1	9.5	9.9	10.0	10.3	10.4	10.3	10.3	10.2	10.2	10.1	10.1	9.9
7.3	7.3	7.3	7.4	7.6	8.3	9.1	9.5	9.6	9.8	8.8	8.0	8.8	11.3	11.1	6.9	4.2	3.7	3.2	3.9	4.7	5.2	5.5	6.8	8.3	8.4	8.7	9.5	10.2	10.0	9.9	9.3	9.0	8.5	7.9	7.5
4.6	3.7	4.0	4.0	4.1	4.5	5.5	7.1	8.1	7.8	7.0	5.8	3.3	5.3	2.8	1.0	.6	.4	1.2	2.8	3.8	5.2	6.1	6.7	6.6	6.2	6.4	7.6	7.8	8.8	9.8	10.5	9.2	7.6	6.5	5.5
2.0	1.8	1.2	.3	.6	1.7	1.9	3.4	5.1	5.9	5.6	4.8	2.3	.7	-.7	-.9	-1.6	-.5	.6	1.1	2.8	4.7	4.9	4.0	2.9	1.9	1.8	3.1	4.4	6.3	7.2	7.4	5.0	3.9	2.7	2.1
.7	.3	.1	-1.1	-1.0	-1.3	-.1	.4	1.2	2.2	2.1	1.6	.7	-.5	-1.0	-1.3	-2.1	-2.8	-2.1	-.6	.7	1.3	1.5	-.2	-1.6	-1.9	-1.4	-.4	.3	1.9	2.8	3.4	2.6	1.5	1.0	.9
-1.8	-1.7	-2.0	-2.3	-3.1	-4.8	-4.5	-3.3	-3.3	-2.8	-2.7	-2.4	-2.4	-2.7	-2.4	-2.7	-3.8	-4.2	-3.8	-3.4	-4.0	-4.4	-3.6	-3.6	-3.4	-.9	.0	.6	-1.3	-2.5	-2.2	-1.9	-2.0	-1.8	-2.0	-2.5
-10.5	-8.9	-7.1	-5.9	-7.5	-9.0	-9.5	-7.5	-6.7	-6.5	-6.7	-7.1	-7.5	-7.9	-7.5	-7.8	-10.1	-10.8	-10.1	-8.6	-9.7	-11.9	-7.0	-6.8	-9.1	-9.5	-6.8	-4.7	-4.4	-3.6	-4.6	-6.2	-7.1	-8.8	-9.6	-10.1
-13.4	-11.6	-10.1	-10.2	-11.2	-10.8	-10.6	-8.6	-7.7	-9.1	-12.7	-13.8	-14.8	-15.1	-15.0	-14.5	-14.0	-10.7	-10.4	-12.7	-11.5	-8.6	-10.2	-12.4	-13.9	-12.9	-11.9	-10.9	-9.3	-9.5	-9.9	-10.2	-11.1	-14.1	-15.3	-15.2
-6.2	-7.0	-7.3	-7.4	-8.0	-9.1	-9.4	-7.9	-5.8	-4.4	-5.5	-8.1	-9.0	-9.0	-7.8	-7.6	-5.8	-4.0	-4.1	-6.1	-5.5	-6.2	-11.6	-13.0	-11.1	-8.2	-4.9	-4.2	-5.6	-5.7	-5.2	-4.9	-5.1	-6.2	-6.1	-6.1
-6.7	-7.9	-8.9	-9.7	-11.1	-11.4	-11.3	-11.2	-9.0	-4.7	-1.3	-1.7	-2.2	-3.5	-5.5	-7.7	-9.4	-6.9	-3.5	-2.3	-2.7	-4.7	-7.4	-5.9	-5.3	-5.3	-3.6	-2.0	-2.7	-2.4	-2.6	-2.0	-2.6	-2.9	-4.6	-5.8
-7.2	-6.6	-6.6	-6.6	-8.5	-11.3	-12.8	-14.7	-15.1	-13.3	-6.7	-6.1	-6.1	-5.6	-8.6	-10.7	-13.8	-14.4	-11.8	-5.6	-5.0	-7.6	-6.7	-4.4	-4.8	-7.8	-8.1	-6.4	-9.6	-8.5	-6.9	-6.5	-6.2	-5.0	-5.7	-6.3
-6.0	-5.7	-4.6	-4.5	-4.4	-5.0	-7.2	-10.3	-11.2	-12.4	-14.2	-10.7	-10.7	-8.5	-6.6	-6.8	-8.7	-11.3	-12.6	-11.0	-8.0	-8.3	-8.7	-6.7	-5.9	-6.8	-8.9	-8.4	-7.4	-6.3	-7.2	-10.0	-11.6	-8.9	-7.7	-6.7
-5.1	-4.5	-4.7	-5.1	-4.2	-3.9	-4.6	-5.1	-5.3	-5.1	-6.9	-7.6	-7.1	-6.8	-6.1	-5.9	-5.1	-5.8	-6.7	-8.0	-7.3	-6.9	-6.9	-7.6	-7.1	-6.5	-6.2	-6.3	-5.8	-6.0	-6.5	-7.1	-8.1	-6.3	-5.2	-6.0
-3.3	-3.5	-4.0	-3.9	-3.3	-3.3	-2.7	-2.4	-2.2	-2.0	-2.1	-3.2	-3.1	-2.7	-2.7	-2.9	-2.8	-2.1	-1.7	-1.8	-2.3	-2.9	-2.8	-2.7	-2.4	-2.4	-2.2	-1.7	-1.8	-2.7	-2.9	-3.0	-3.1	-2.7	-2.7	-2.8
-.6	-.5	-.4	-.5	-.4	-.1	.1	.4	.3	.5	.7	.4	.3	.2	.4	.5	.6	.7	.9	1.0	.9	.9	.7	.8	.6	.8	.9	.9	.9	.4	.3	.5	.2	.1	.1	-.2
2.6	2.5	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	3.3	3.0	2.6	2.5	2.8	2.7	3.0	3.0	2.9	2.7	2.9	3.8	5.1	4.3	3.5	4.8	5.8	5.8	4.8	5.2	6.2	4.8	3.8	2.9	2.8
5.2	5.0	4.9	5.4	6.9	6.6	6.6	6.9	7.4	7.4	6.7	7.3	5.8	5.0	4.4	5.7	8.3	11.2	13.2	14.3	14.1	14.9	17.1	20.2	14.9	14.8	18.5	20.1	23.1	23.6	23.8	23.8	21.3	17.8	9.5	5.4
10.7	10.4	10.1	11.1	11.6	12.0	13.1	15.0	16.8	14.8	12.1	10.6	10.8	11.3	12.3	14.5	16.8	19.3	20.5	21.8	23.0	24.6	24.7	24.8	24.7	24.5	24.8	25.1	25.2	24.3	23.1	21.7	20.1	17.6	13.1	11.2

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations

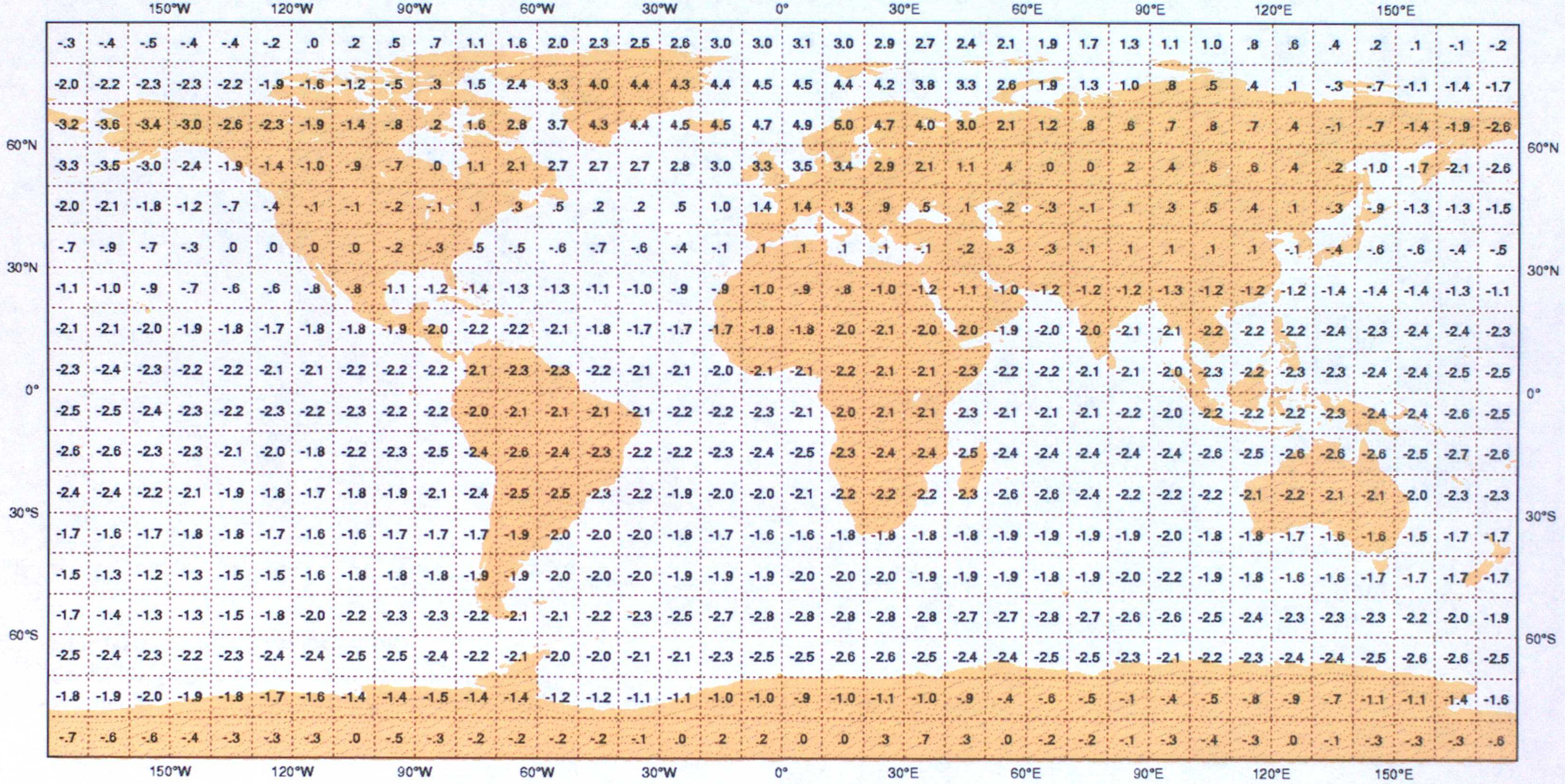


2.7	2.8	2.9	2.9	2.9	2.9	2.8	2.7	2.7	2.9	2.9	2.9	3.1	3.3	3.3	3.2	3.4	3.4	3.5	3.4	3.2	3.0	2.8	2.8	2.5	2.3	2.2	2.1	2.1	2.2	2.2	2.2	2.3	2.4	2.4	2.5
3.3	3.2	3.0	3.0	2.8	2.7	2.8	2.7	2.9	3.5	3.5	3.7	4.5	4.5	4.6	4.2	3.4	3.2	2.8	3.0	3.0	2.8	2.6	2.5	2.2	2.1	2.2	2.2	2.3	2.1	2.0	1.9	2.1	2.4	3.0	3.2
3.1	3.1	2.9	2.6	2.5	2.7	2.8	2.7	2.9	3.3	3.4	3.8	3.3	3.9	4.5	3.9	3.7	3.7	3.5	3.4	2.8	2.5	2.2	2.0	2.3	2.7	3.1	3.9	3.7	3.3	2.9	2.7	2.8	2.7	3.2	3.4
2.7	2.8	2.8	3.1	3.4	3.2	3.0	3.1	2.7	2.5	3.4	3.4	2.9	3.3	4.1	3.9	3.9	3.6	3.3	3.5	3.2	2.6	2.4	2.6	2.7	3.1	3.7	3.8	3.7	3.7	2.9	2.6	2.2	2.4	2.5	2.6
2.7	2.9	2.8	3.5	3.4	4.0	3.6	3.3	3.4	3.3	3.6	3.3	3.1	3.4	3.5	3.3	3.6	4.1	4.5	4.1	3.2	2.9	3.3	3.6	3.9	3.6	3.6	4.4	5.2	4.6	3.9	3.5	2.8	3.0	2.8	2.7
3.1	3.3	3.3	3.9	4.0	4.8	4.8	4.3	4.2	4.5	4.2	4.0	3.8	3.8	3.9	3.8	4.2	4.3	4.0	3.6	4.5	4.7	4.6	4.0	4.6	4.7	4.0	3.9	3.9	4.1	4.0	4.3	4.2	3.4	3.7	3.6
5.1	5.1	4.6	4.7	4.7	4.6	4.7	4.9	5.2	5.3	4.8	4.2	4.2	4.6	5.0	4.9	5.6	5.4	5.7	5.2	5.3	5.5	4.1	4.7	5.5	5.5	4.6	4.0	3.9	3.7	4.2	4.4	4.3	5.0	5.1	4.7
5.9	6.3	5.6	5.2	5.4	5.9	5.6	4.9	4.9	4.0	3.8	3.1	3.1	3.1	3.3	4.0	5.1	6.2	6.1	5.6	4.8	5.1	4.5	4.2	3.9	4.4	4.7	4.0	3.7	3.3	3.6	4.1	5.5	5.0	4.2	4.0
4.9	5.1	4.6	4.5	4.7	4.4	3.9	3.9	3.9	3.1	4.7	5.3	5.8	6.3	6.1	5.3	4.4	3.0	3.3	4.0	4.5	4.2	3.6	4.3	4.6	5.0	4.5	3.8	3.6	3.9	4.1	4.4	5.4	6.2	5.6	4.9
4.3	4.2	4.3	4.5	3.9	3.7	3.5	3.8	4.2	3.7	2.0	2.0	2.5	3.2	4.9	4.6	4.2	4.0	3.1	2.3	2.9	4.1	4.1	3.4	3.5	3.8	3.2	2.4	2.7	2.6	2.6	2.2	2.4	2.8	3.5	4.1
4.8	4.4	4.2	4.0	5.4	5.4	4.2	3.8	3.3	5.0	6.1	4.7	5.2	4.1	5.4	4.9	3.3	3.5	4.6	5.2	4.6	4.7	4.7	3.4	3.6	4.7	5.0	5.1	4.9	4.8	5.0	5.4	5.4	5.0	4.6	4.4
4.8	4.0	4.1	4.5	4.9	4.9	4.9	5.0	4.7	5.0	4.5	4.9	5.4	5.5	5.2	5.2	5.4	4.9	4.4	5.0	4.6	4.6	5.0	5.2	5.0	5.1	4.9	5.5	5.4	5.1	5.7	5.7	4.5	5.0	5.4	5.5
4.1	3.8	4.2	4.7	4.5	4.1	4.3	4.0	4.3	4.2	4.7	5.7	5.3	4.9	4.7	4.8	4.9	5.0	4.9	4.8	4.4	4.2	4.5	4.6	4.8	4.5	4.7	5.0	4.9	5.1	5.6	5.1	5.2	4.7	3.8	4.2
3.5	3.8	3.3	3.6	3.6	3.7	3.6	3.5	3.4	3.3	3.7	3.9	4.0	4.1	3.9	3.9	3.9	3.5	3.6	3.6	3.8	3.7	3.7	3.8	3.9	4.0	3.7	3.5	3.8	4.0	4.0	4.2	3.8	3.6	3.8	3.4
3.3	3.1	3.2	3.3	3.1	3.1	3.3	3.2	2.8	2.9	2.7	2.8	3.1	3.2	3.0	2.8	2.8	2.9	2.9	2.8	2.7	2.8	2.8	2.7	3.0	3.0	2.9	3.1	3.1	3.0	3.1	2.9	2.8	2.9	3.0	3.1
2.5	2.5	2.6	2.5	2.5	2.5	2.4	2.3	2.3	2.3	2.5	2.7	2.6	2.5	2.3	2.2	2.3	2.2	2.2	2.3	2.4	2.5	3.3	4.4	3.6	2.7	4.1	5.0	5.2	4.6	5.3	6.0	4.3	3.3	2.5	2.4
2.4	2.5	2.4	2.9	4.1	4.0	3.6	3.7	3.7	3.8	2.6	2.0	1.9	2.0	2.2	3.3	4.4	5.2	6.0	6.5	7.3	6.7	5.7	5.3	6.6	6.8	6.5	5.2	4.8	4.7	4.3	3.5	4.1	4.3	4.8	2.4
4.7	4.4	4.4	3.9	3.7	3.8	3.7	3.8	3.9	3.1	3.7	4.3	4.5	4.6	4.9	4.6	4.5	4.6	5.1	5.1	4.9	4.9	4.4	4.1	3.6	3.3	3.2	3.1	3.1	2.9	2.6	2.6	2.5	3.7	5.3	5.2

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005

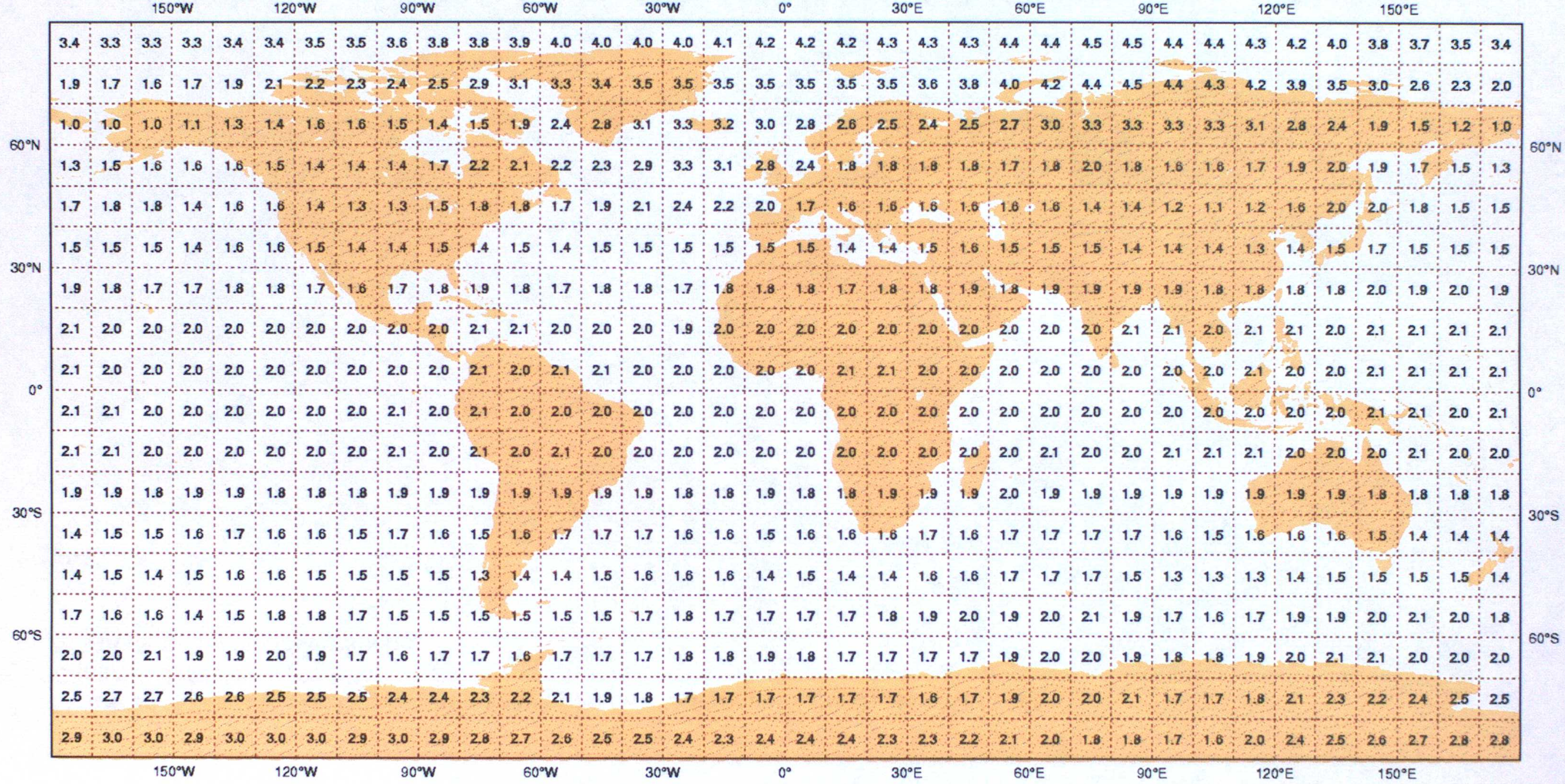
Channel: HIRS4 (400 hPa)

NOAA15, using all observations



-.3	-.4	-.5	-.4	-.4	-.2	.0	.2	.5	.7	1.1	1.6	2.0	2.3	2.5	2.6	3.0	3.0	3.1	3.0	2.9	2.7	2.4	2.1	1.9	1.7	1.3	1.1	1.0	.8	.6	.4	.2	.1	-.1	-.2
-2.0	-2.2	-2.3	-2.3	-2.2	-1.9	-1.6	-1.2	-.5	.3	1.5	2.4	3.3	4.0	4.4	4.3	4.4	4.5	4.5	4.4	4.2	3.8	3.3	2.6	1.9	1.3	1.0	.8	.5	.4	.1	-.3	-.7	-1.1	-1.4	-1.7
-3.2	-3.6	-3.4	-3.0	-2.6	-2.3	-1.9	-1.4	-.8	.2	1.6	2.8	3.7	4.3	4.4	4.5	4.5	4.7	4.9	5.0	4.7	4.0	3.0	2.1	1.2	.8	.6	.7	.8	.7	.4	-.1	-.7	-1.4	-1.9	-2.6
-3.3	-3.5	-3.0	-2.4	-1.9	-1.4	-1.0	-.9	-.7	.0	1.1	2.1	2.7	2.7	2.7	2.8	3.0	3.3	3.5	3.4	2.9	2.1	1.1	.4	.0	.0	.2	.4	.6	.6	.4	-.2	-1.0	-1.7	-2.1	-2.6
-2.0	-2.1	-1.8	-1.2	-.7	-.4	-.1	-.1	-.2	-.1	.1	.3	.5	.2	.2	.5	1.0	1.4	1.4	1.3	.9	.5	.1	-.2	-.3	-.1	.1	.3	.5	.4	.1	-.3	-.9	-1.3	-1.3	-1.5
-.7	-.9	-.7	-.3	.0	.0	.0	.0	-.2	-.3	-.5	-.5	-.6	-.7	-.6	-.4	-.1	.1	.1	.1	.1	-.1	-.2	-.3	-.3	-.1	.1	.1	.1	.1	-.1	-.4	-.6	-.6	-.4	-.5
-1.1	-1.0	-.9	-.7	-.6	-.6	-.8	-.8	-1.1	-1.2	-1.4	-1.3	-1.3	-1.1	-1.0	-.9	-.9	-1.0	-.9	-.8	-1.0	-1.2	-1.1	-1.0	-1.2	-1.2	-1.2	-1.3	-1.2	-1.2	-1.2	-1.4	-1.4	-1.4	-1.3	-1.1
-2.1	-2.1	-2.0	-1.9	-1.8	-1.7	-1.8	-1.8	-1.9	-2.0	-2.2	-2.2	-2.1	-1.8	-1.7	-1.7	-1.7	-1.8	-1.8	-2.0	-2.1	-2.0	-2.0	-1.9	-2.0	-2.0	-2.1	-2.1	-2.2	-2.2	-2.2	-2.4	-2.3	-2.4	-2.4	-2.3
-2.3	-2.4	-2.3	-2.2	-2.2	-2.1	-2.1	-2.2	-2.2	-2.2	-2.1	-2.3	-2.3	-2.2	-2.1	-2.1	-2.0	-2.1	-2.1	-2.2	-2.1	-2.1	-2.3	-2.2	-2.2	-2.1	-2.1	-2.0	-2.3	-2.2	-2.3	-2.3	-2.4	-2.4	-2.5	-2.5
-2.5	-2.5	-2.4	-2.3	-2.2	-2.3	-2.2	-2.3	-2.2	-2.2	-2.0	-2.1	-2.1	-2.1	-2.1	-2.2	-2.2	-2.3	-2.1	-2.0	-2.1	-2.1	-2.3	-2.1	-2.1	-2.1	-2.2	-2.0	-2.2	-2.2	-2.2	-2.3	-2.4	-2.4	-2.6	-2.5
-2.6	-2.6	-2.3	-2.3	-2.1	-2.0	-1.8	-2.2	-2.3	-2.5	-2.4	-2.6	-2.4	-2.3	-2.2	-2.2	-2.3	-2.4	-2.5	-2.3	-2.4	-2.4	-2.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.6	-2.5	-2.6	-2.6	-2.6	-2.5	-2.7	-2.6
-2.4	-2.4	-2.2	-2.1	-1.9	-1.8	-1.7	-1.8	-1.9	-2.1	-2.4	-2.5	-2.5	-2.3	-2.2	-1.9	-2.0	-2.0	-2.1	-2.2	-2.2	-2.2	-2.3	-2.6	-2.6	-2.4	-2.2	-2.2	-2.2	-2.1	-2.2	-2.1	-2.1	-2.0	-2.3	-2.3
-1.7	-1.6	-1.7	-1.8	-1.8	-1.7	-1.6	-1.6	-1.7	-1.7	-1.7	-1.9	-2.0	-2.0	-2.0	-1.8	-1.7	-1.6	-1.6	-1.8	-1.8	-1.8	-1.8	-1.9	-1.9	-1.9	-1.9	-2.0	-1.8	-1.8	-1.7	-1.6	-1.6	-1.5	-1.7	-1.7
-1.5	-1.3	-1.2	-1.3	-1.5	-1.5	-1.6	-1.8	-1.8	-1.8	-1.9	-1.9	-2.0	-2.0	-2.0	-1.9	-1.9	-1.9	-2.0	-2.0	-2.0	-1.9	-1.9	-1.9	-1.8	-1.9	-2.0	-2.2	-1.9	-1.8	-1.6	-1.6	-1.7	-1.7	-1.7	-1.7
-1.7	-1.4	-1.3	-1.3	-1.5	-1.8	-2.0	-2.2	-2.3	-2.3	-2.2	-2.1	-2.1	-2.2	-2.3	-2.5	-2.7	-2.8	-2.8	-2.8	-2.8	-2.8	-2.7	-2.7	-2.8	-2.7	-2.6	-2.6	-2.5	-2.4	-2.3	-2.3	-2.3	-2.2	-2.0	-1.9
-2.5	-2.4	-2.3	-2.2	-2.3	-2.4	-2.4	-2.5	-2.5	-2.4	-2.2	-2.1	-2.0	-2.0	-2.1	-2.1	-2.3	-2.5	-2.5	-2.6	-2.6	-2.5	-2.4	-2.4	-2.5	-2.5	-2.3	-2.1	-2.2	-2.3	-2.4	-2.4	-2.5	-2.6	-2.6	-2.5
-1.8	-1.9	-2.0	-1.9	-1.8	-1.7	-1.6	-1.4	-1.4	-1.5	-1.4	-1.4	-1.2	-1.2	-1.1	-1.1	-1.0	-1.0	-.9	-1.0	-1.1	-1.0	-.9	-.4	-.6	-.5	-.1	-.4	-.5	-.8	-.9	-.7	-1.1	-1.1	-1.4	-1.6
-.7	-.6	-.6	-.4	-.3	-.3	-.3	.0	-.5	-.3	-.2	-.2	-.2	-.2	-.1	.0	.2	.2	.0	.0	.3	.7	.3	.0	-.2	-.2	-.1	-.3	-.4	-.3	.0	-.1	-.3	-.3	-.3	-.6

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



3.4	3.3	3.3	3.3	3.4	3.4	3.5	3.5	3.6	3.8	3.8	3.9	4.0	4.0	4.0	4.0	4.1	4.2	4.2	4.2	4.3	4.3	4.3	4.4	4.4	4.5	4.5	4.4	4.4	4.3	4.2	4.0	3.8	3.7	3.5	3.4
1.9	1.7	1.6	1.7	1.9	2.1	2.2	2.3	2.4	2.5	2.9	3.1	3.3	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.6	3.8	4.0	4.2	4.4	4.5	4.4	4.3	4.2	3.9	3.5	3.0	2.6	2.3	2.0
1.0	1.0	1.0	1.1	1.3	1.4	1.6	1.6	1.5	1.4	1.5	1.9	2.4	2.8	3.1	3.3	3.2	3.0	2.8	2.6	2.5	2.4	2.5	2.7	3.0	3.3	3.3	3.3	3.3	3.1	2.8	2.4	1.9	1.5	1.2	1.0
1.3	1.5	1.6	1.6	1.6	1.5	1.4	1.4	1.4	1.7	2.2	2.1	2.2	2.3	2.9	3.3	3.1	2.8	2.4	1.8	1.8	1.8	1.8	1.7	1.8	2.0	1.8	1.6	1.6	1.7	1.9	2.0	1.9	1.7	1.5	1.3
1.7	1.8	1.8	1.4	1.6	1.6	1.4	1.3	1.3	1.5	1.8	1.8	1.7	1.9	2.1	2.4	2.2	2.0	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.4	1.4	1.2	1.1	1.2	1.6	2.0	2.0	1.8	1.5	1.5
1.5	1.5	1.5	1.4	1.6	1.6	1.5	1.4	1.4	1.5	1.4	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.4	1.5	1.7	1.5	1.5	1.5
1.9	1.8	1.7	1.7	1.8	1.8	1.7	1.6	1.7	1.8	1.9	1.8	1.7	1.8	1.8	1.7	1.8	1.8	1.8	1.7	1.8	1.8	1.9	1.8	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	2.0	1.9	2.0	1.9
2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1
2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.1
2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1
2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.0
1.9	1.9	1.8	1.9	1.9	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.9	1.8	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8
1.4	1.5	1.5	1.6	1.7	1.6	1.6	1.5	1.7	1.6	1.5	1.6	1.7	1.7	1.7	1.6	1.6	1.5	1.6	1.6	1.6	1.7	1.6	1.7	1.7	1.7	1.7	1.6	1.5	1.6	1.6	1.6	1.5	1.4	1.4	1.4
1.4	1.5	1.4	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.3	1.4	1.4	1.5	1.6	1.6	1.6	1.4	1.5	1.4	1.4	1.6	1.6	1.7	1.7	1.7	1.5	1.3	1.3	1.3	1.4	1.5	1.5	1.5	1.5	1.4
1.7	1.6	1.6	1.4	1.5	1.8	1.8	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.7	1.8	1.7	1.7	1.7	1.7	1.8	1.9	2.0	1.9	2.0	2.1	1.9	1.7	1.6	1.7	1.9	1.9	2.0	2.1	2.0	1.8
2.0	2.0	2.1	1.9	1.9	2.0	1.9	1.7	1.6	1.7	1.7	1.6	1.7	1.7	1.7	1.8	1.8	1.9	1.8	1.7	1.7	1.7	1.7	1.9	2.0	2.0	1.9	1.8	1.8	1.9	2.0	2.1	2.1	2.0	2.0	2.0
2.5	2.7	2.7	2.6	2.6	2.5	2.5	2.5	2.4	2.4	2.3	2.2	2.1	1.9	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.7	1.9	2.0	2.0	2.1	1.7	1.7	1.8	2.1	2.3	2.2	2.4	2.5	2.5
2.9	3.0	3.0	2.9	3.0	3.0	3.0	2.9	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.4	2.4	2.4	2.3	2.3	2.2	2.1	2.0	1.8	1.8	1.7	1.6	2.0	2.4	2.5	2.6	2.7	2.8	2.8

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations

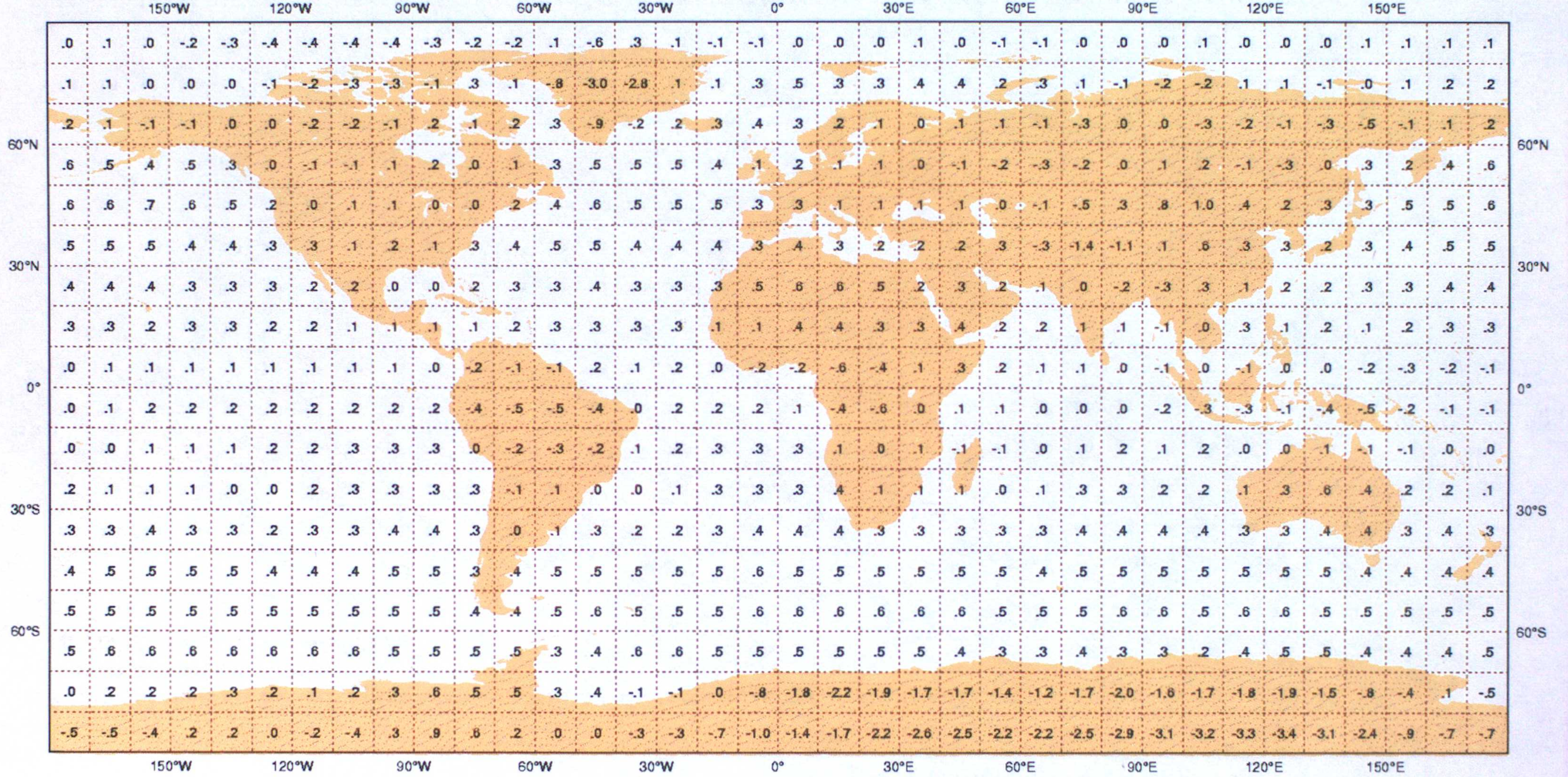

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.0 .1 .0 -.2 -.3 -.4 -.4 -.4 -.4 -.3 -.2 -.2 .1 -.6 .3 .1 -.1 -.1 .0 .0 .0 .1 .0 -.1 -.1 .0 .0 .0 .1 .0 .0 .0 .1 .1 .1 .1
.1 .1 .0 .0 .0 -.1 -.2 -.3 -.3 -.1 .3 .1 -.8 -3.0 -2.8 .1 .1 .3 .5 .3 .3 .4 .4 .2 .3 .1 -.1 -.2 -.2 .1 .1 -.1 .0 .1 .2 .2
.2 .1 -.1 -.1 .0 .0 -.2 -.2 -.1 .2 .1 .2 .3 -.9 -.2 .2 .3 .4 .3 .2 .1 .0 .1 .1 -.1 -.3 .0 .0 -.3 -.2 -.1 -.3 -.5 -.1 .1 .2
.6 .5 .4 .5 .3 .0 -.1 -.1 .1 .2 .0 .1 .3 .5 .5 .5 .4 .1 .2 .1 .1 .0 -.1 -.2 -.3 -.2 .0 .1 .2 -.1 -.3 .0 .3 .2 .4 .6
.6 .6 .7 .6 .5 .2 .0 .1 .1 .0 .0 .2 .4 .6 .5 .5 .5 .3 .3 .1 .1 .1 .1 .0 -.1 -.5 .3 .8 1.0 .4 .2 .3 .3 .5 .5 .6
.5 .5 .5 .4 .4 .3 .3 .1 .2 .1 .3 .4 .5 .5 .4 .4 .4 .3 .4 .3 .2 .2 .2 .3 -.3 -1.4 -1.1 .1 .6 .3 .3 .2 .3 .4 .5 .5
.4 .4 .4 .3 .3 .3 .2 .2 .0 .0 .2 .3 .3 .4 .3 .3 .3 .5 .6 .6 .5 .2 .3 .2 .1 .0 -.2 -.3 .3 .1 .2 .2 .3 .3 .4 .4
.3 .3 .2 .3 .3 .2 .2 .1 .1 .1 .1 .2 .3 .3 .3 .3 .1 .1 .4 .4 .3 .3 .4 .2 .2 .1 .1 -.1 .0 .3 .1 .2 .1 .2 .3 .3
.0 .1 .1 .1 .1 .1 .1 .1 .1 .0 -.2 -.1 -.1 .2 .1 .2 .0 -.2 -.2 -.6 -.4 .1 .3 .2 .1 .1 .0 -.1 .0 -.1 .0 .0 -.2 -.3 -.2 -.1
.0 .1 .2 .2 .2 .2 .2 .2 .2 .2 -.4 -.5 -.5 -.4 .0 .2 .2 .2 .1 -.4 -.6 .0 .1 .1 .0 .0 .0 -.2 -.3 -.3 -.1 -.4 -.5 -.2 -.1 -.1
.0 .0 .1 .1 .1 .2 .2 .3 .3 .3 .0 -.2 -.3 -.2 .1 .2 .3 .3 .3 .1 .0 .1 -.1 -.1 .0 .1 .2 .1 .2 .0 .0 .1 -.1 -.1 .0 .0
.2 .1 .1 .1 .0 .0 .2 .3 .3 .3 .3 -.1 .1 .0 .0 .1 .3 .3 .3 .4 .1 .1 .1 .0 .1 .3 .3 .2 .2 .1 .3 .6 .4 .2 .2 .1
.3 .3 .4 .3 .3 .2 .3 .3 .4 .4 .3 .0 .1 .3 .2 .2 .3 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .4 .4 .3 .4 .3
.4 .5 .5 .5 .5 .4 .4 .4 .5 .5 .3 .4 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .6 .5 .5 .5 .6 .6 .6 .6 .6 .6 .5 .5 .5 .6 .6 .5 .6 .6 .5 .5 .5 .5 .5
.5 .6 .6 .6 .6 .6 .6 .6 .5 .5 .5 .5 .3 .4 .6 .6 .5 .5 .5 .5 .5 .5 .4 .3 .3 .4 .3 .3 .2 .4 .5 .5 .4 .4 .4 .5
.0 .2 .2 .2 .3 .2 .1 .2 .3 .6 .5 .5 .3 .4 -.1 -.1 .0 -.8 -1.8 -2.2 -1.9 -1.7 -1.7 -1.4 -1.2 -1.7 -2.0 -1.6 -1.7 -1.8 -1.9 -1.5 -.8 -.4 .1 -.5
-.5 -.5 -.4 .2 .2 .0 -.2 -.4 .3 .9 .6 .2 .0 .0 -.3 -.3 -.7 -1.0 -1.4 -1.7 -2.2 -2.6 -2.5 -2.2 -2.2 -2.5 -2.9 -3.1 -3.2 -3.3 -3.4 -3.1 -2.4 -.9 -.7 -.7

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations

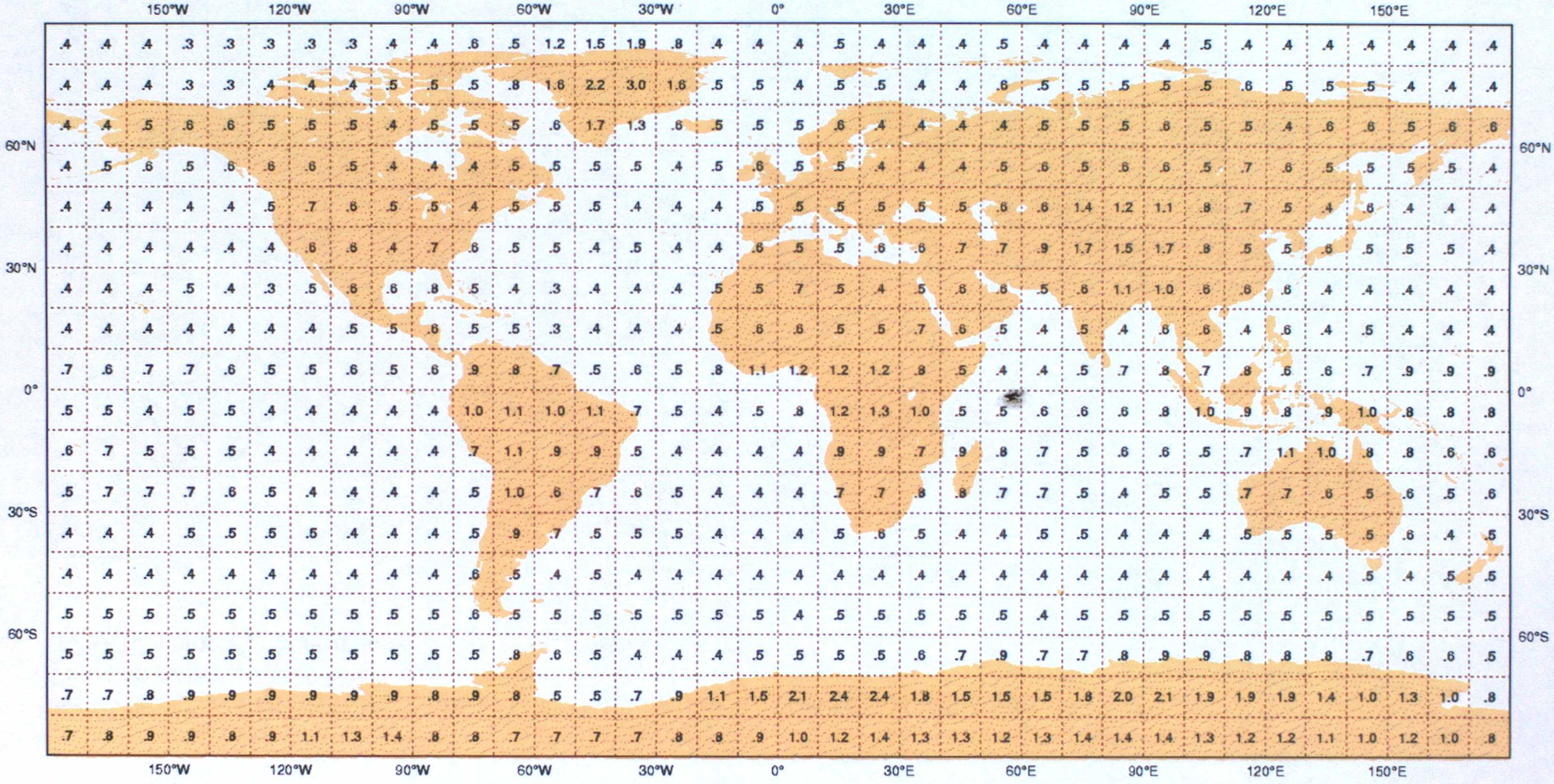

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .6 .5 1.2 1.5 1.9 .8 .4 .4 .4 .5 .4 .4 .4 .5 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .3 .3 .4 .4 .4 .5 .5 .5 .8 1.6 2.2 3.0 1.6 .5 .5 .4 .5 .5 .4 .4 .6 .5 .5 .5 .5 .5 .6 .5 .5 .5 .4 .4 .4
.4 .4 .5 .6 .6 .5 .5 .5 .4 .5 .5 .5 .6 1.7 1.3 .6 .5 .5 .5 .6 .4 .4 .4 .4 .5 .5 .5 .6 .5 .5 .4 .6 .6 .5 .6 .6
.4 .5 .6 .5 .6 .6 .6 .5 .4 .4 .4 .5 .5 .5 .5 .4 .5 .6 .5 .5 .4 .4 .4 .5 .6 .5 .6 .6 .5 .7 .6 .5 .5 .5 .5 .4
.4 .4 .4 .4 .4 .5 .7 .6 .5 .5 .4 .5 .5 .5 .4 .4 .4 .5 .5 .5 .5 .5 .5 .6 .6 1.4 1.2 1.1 .8 .7 .5 .4 .6 .4 .4 .4
.4 .4 .4 .4 .4 .4 .6 .6 .4 .7 .6 .5 .5 .4 .5 .4 .4 .6 .5 .5 .6 .6 .7 .7 .9 1.7 1.5 1.7 .8 .5 .5 .6 .5 .5 .5 .4
.4 .4 .4 .5 .4 .3 .5 .6 .6 .8 .5 .4 .3 .4 .4 .4 .5 .5 .7 .5 .4 .5 .6 .6 .5 .6 1.1 1.0 .6 .6 .6 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .5 .5 .6 .5 .5 .3 .4 .4 .4 .5 .6 .6 .5 .5 .7 .6 .5 .4 .5 .4 .6 .6 .4 .6 .4 .5 .4 .4 .4
.7 .6 .7 .7 .6 .5 .5 .6 .5 .6 .9 .8 .7 .5 .6 .5 .8 1.1 1.2 1.2 1.2 .8 .5 .4 .4 .5 .7 .8 .7 .8 .6 .6 .7 .9 .9 .9
.5 .5 .4 .5 .5 .4 .4 .4 .4 .4 1.0 1.1 1.0 1.1 .7 .5 .4 .5 .8 1.2 1.3 1.0 .5 .5 .6 .6 .6 .8 1.0 .9 .8 .9 1.0 .8 .8 .8
.6 .7 .5 .5 .5 .4 .4 .4 .4 .4 .7 1.1 .9 .9 .5 .4 .4 .4 .4 .9 .9 .7 .9 .8 .7 .5 .6 .6 .5 .7 1.1 1.0 .8 .8 .6 .6
.5 .7 .7 .7 .6 .5 .4 .4 .4 .4 .5 1.0 .6 .7 .6 .5 .4 .4 .4 .7 .7 .8 .8 .7 .7 .5 .4 .5 .5 .7 .7 .6 .5 .6 .5 .6
.4 .4 .4 .5 .5 .5 .5 .4 .4 .4 .5 .9 .7 .5 .5 .5 .4 .4 .4 .5 .6 .5 .4 .4 .5 .5 .4 .4 .4 .5 .5 .5 .5 .6 .4 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .6 .5 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .8 .6 .5 .4 .4 .4 .5 .5 .5 .5 .6 .7 .9 .7 .7 .8 .9 .9 .8 .8 .8 .7 .6 .6 .5
.7 .7 .8 .9 .9 .9 .9 .9 .9 .8 .9 .8 .5 .5 .7 .9 1.1 1.5 2.1 2.4 2.4 1.8 1.5 1.5 1.5 1.8 2.0 2.1 1.9 1.9 1.9 1.4 1.0 1.3 1.0 .8
.7 .8 .9 .9 .8 .9 1.1 1.3 1.4 .8 .8 .7 .7 .7 .7 .8 .8 .9 1.0 1.2 1.4 1.3 1.3 1.2 1.3 1.4 1.4 1.4 1.3 1.2 1.2 1.1 1.0 1.2 1.0 .8

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

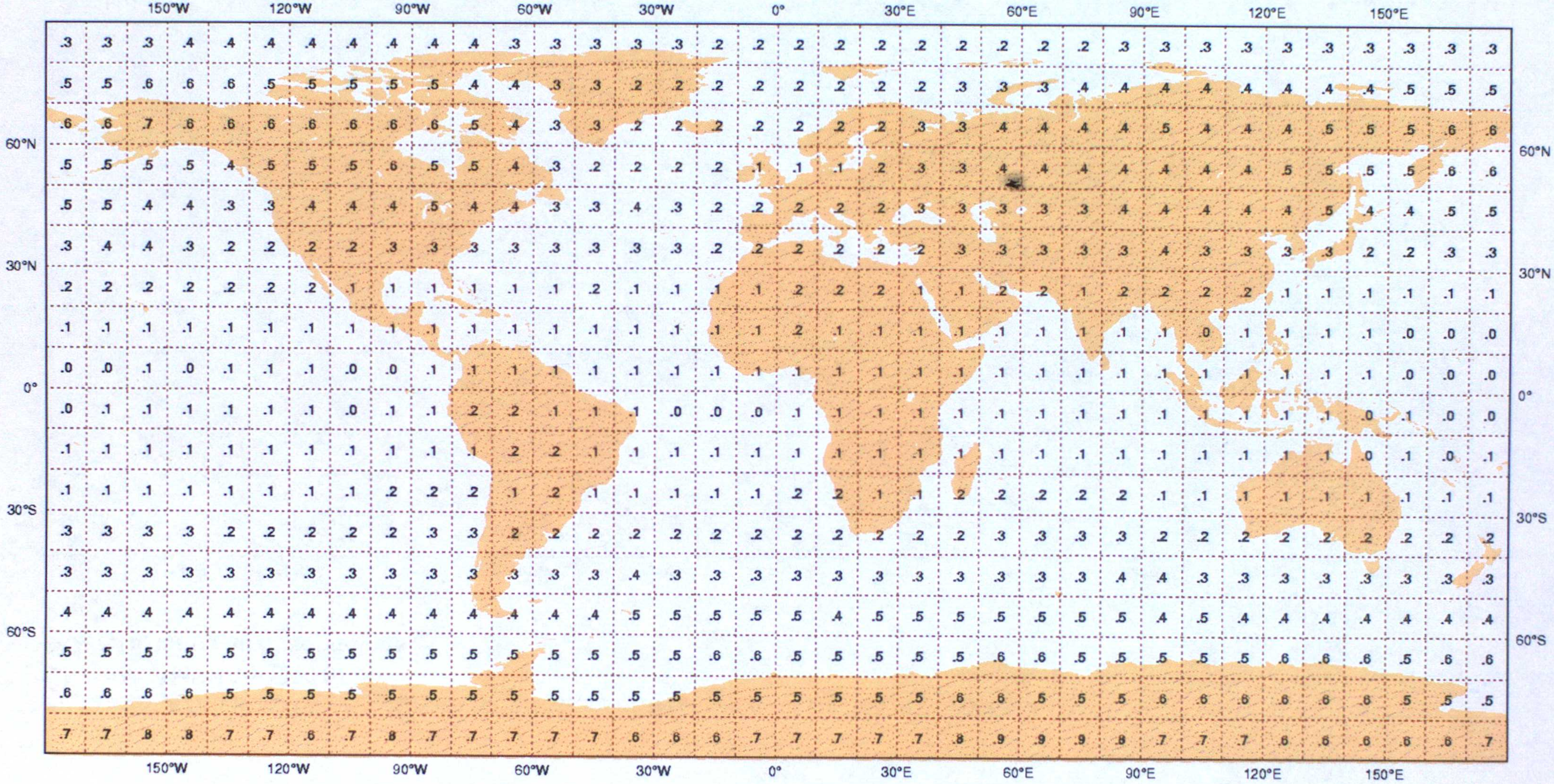

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.5 .5 .6 .6 .6 .5 .5 .5 .5 .5 .4 .4 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5
.6 .6 .7 .6 .6 .6 .6 .6 .6 .6 .5 .4 .3 .3 .2 .2 .2 .2 .2 .2 .2 .3 .3 .4 .4 .4 .4 .5 .4 .4 .4 .5 .5 .5 .6 .6
.5 .5 .5 .5 .4 .5 .5 .5 .6 .5 .5 .4 .3 .2 .2 .2 .2 .1 .1 .1 .2 .3 .3 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .6 .6
.5 .5 .4 .4 .3 .3 .4 .4 .4 .5 .4 .4 .3 .3 .4 .3 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .5 .4 .4 .5 .5
.3 .4 .4 .3 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .2 .2 .3 .3
.2 .2 .2 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1 .2 .1 .1 .1 .1 .2 .2 .2 .1 .1 .2 .2 .1 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1
.1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .1 .1 .1 .1 .0 .0 .0
.0 .0 .1 .0 .1 .1 .1 .0 .0 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .0 .0
.0 .1 .1 .1 .1 .1 .1 .0 .1 .1 .2 .2 .1 .1 .1 .0 .0 .0 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .1 .0 .0
.1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .2 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .1 .0 .1
.1 .1 .1 .1 .1 .1 .1 .1 .2 .2 .2 .1 .2 .1 .1 .1 .1 .1 .2 .2 .1 .1 .2 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1
.3 .3 .3 .3 .2 .2 .2 .2 .2 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .4 .5 .4 .4 .4 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .5 .5 .5 .5 .5 .6 .6 .5 .5 .5 .5 .5 .6 .6 .6 .5 .6 .6
.6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .5 .5 .5 .6 .6 .6 .6 .6 .6 .5 .5 .5
.7 .7 .8 .8 .7 .7 .6 .7 .8 .7 .7 .7 .7 .7 .6 .6 .6 .7 .7 .7 .7 .7 .8 .9 .9 .9 .8 .7 .7 .7 .6 .6 .6 .6 .6 .7

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

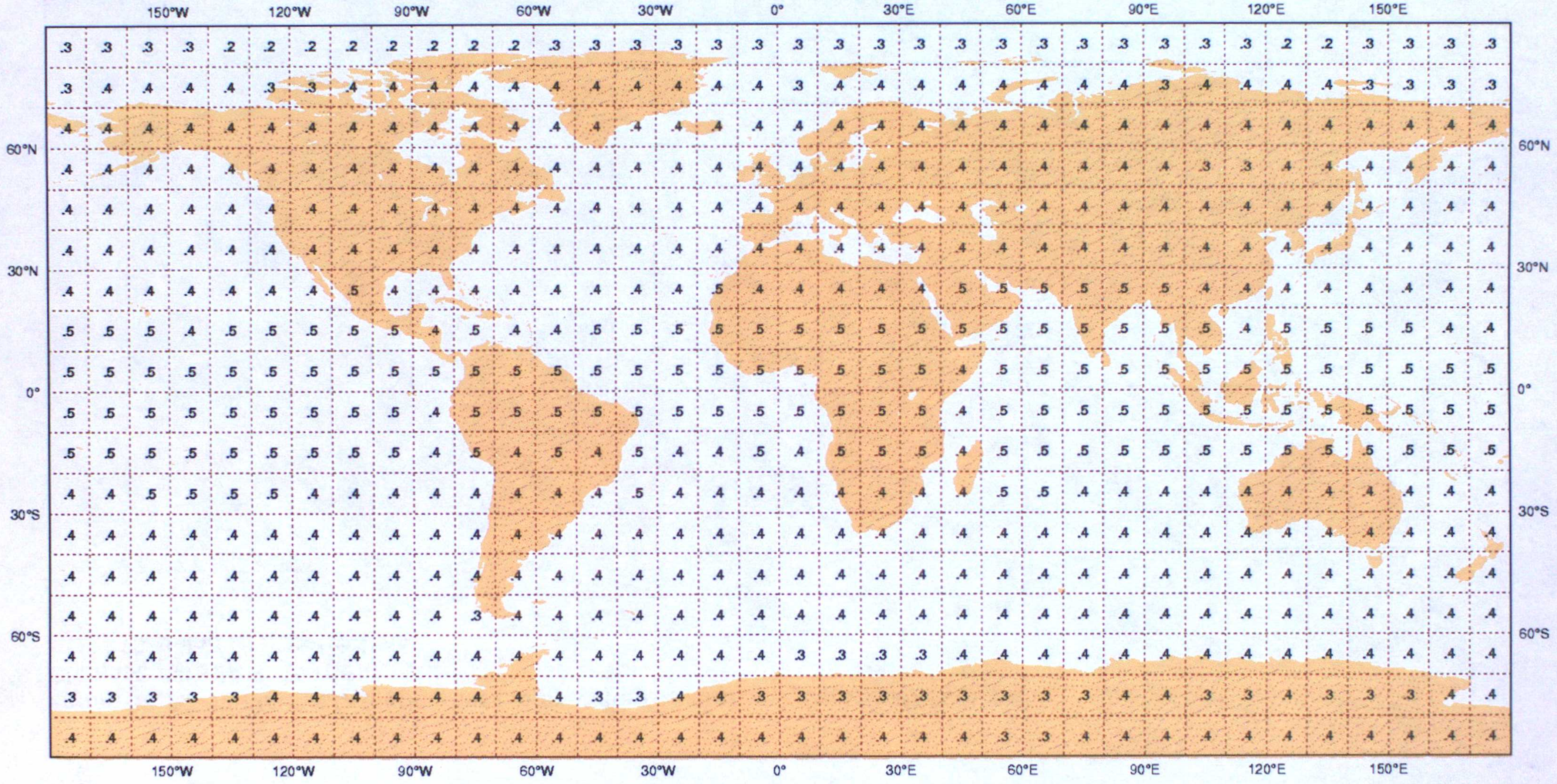
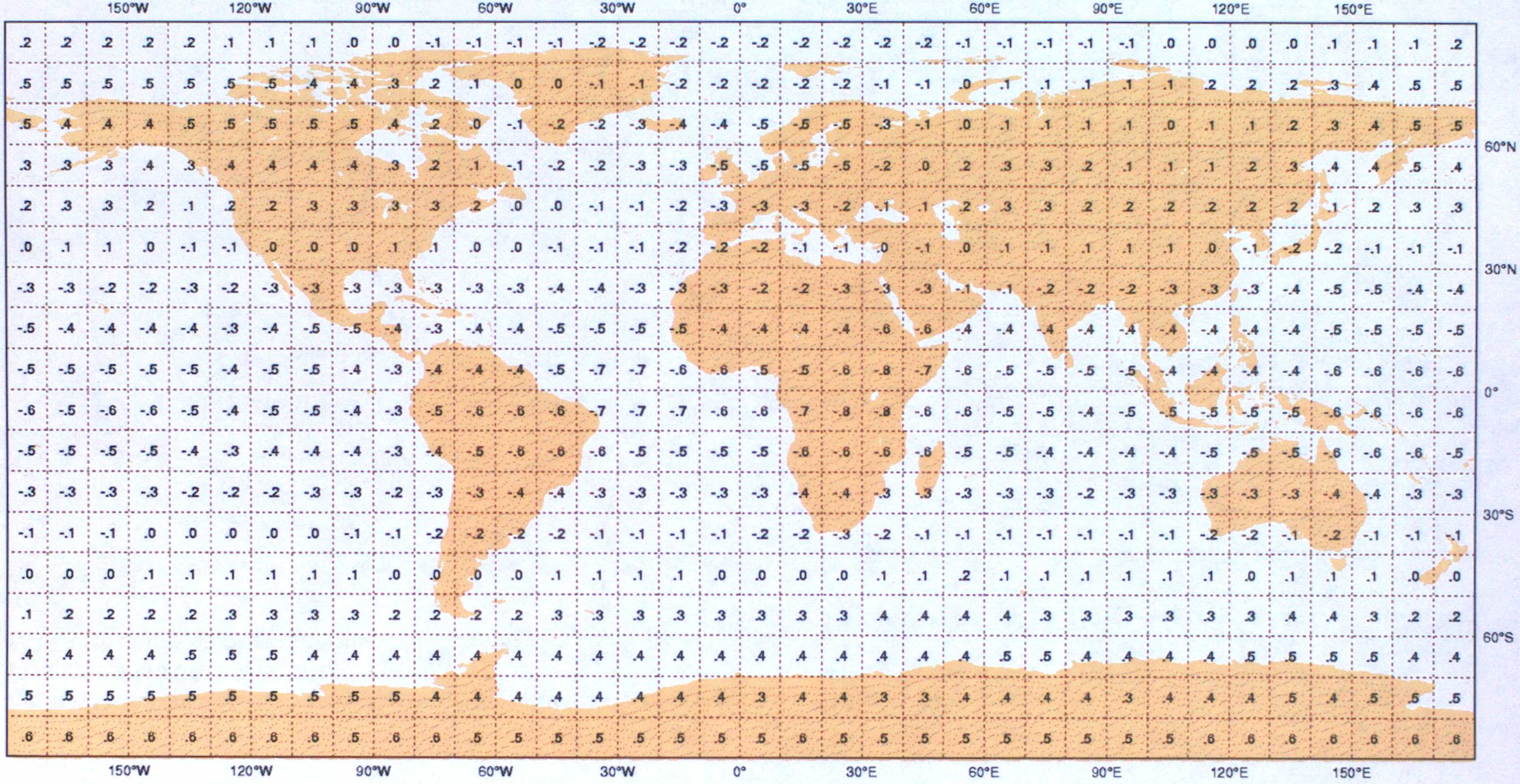

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations



.2	.2	.2	.2	.2	.1	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.1	.0	.0	.0	.0	.1	.1	.1	.2
.5	.5	.5	.5	.5	.5	.5	.4	.4	.3	.2	.1	.0	.0	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.1	-.1	.0	.1	.1	.1	.1	.1	.2	.2	.2	.3	.4	.5	.5
.5	.4	.4	.4	.5	.5	.5	.5	.5	.4	.2	.0	-.1	-.2	-.2	-.3	-.4	-.4	-.5	-.5	-.5	-.3	-.1	.0	.1	.1	.1	.1	.0	.1	.1	.2	.3	.4	.5	.5
.3	.3	.3	.4	.3	.4	.4	.4	.4	.3	.2	.1	-.1	-.2	-.2	-.3	-.3	-.5	-.5	-.5	-.5	-.2	.0	.2	.3	.3	.2	.1	.1	.1	.2	.3	.4	.4	.5	.4
.2	.3	.3	.2	.1	.2	.2	.3	.3	.3	.3	.2	.0	.0	-.1	-.1	-.2	-.3	-.3	-.3	-.2	-.1	.1	.2	.3	.3	.2	.2	.2	.2	.2	.2	.1	.2	.3	.3
.0	.1	.1	.0	-.1	-.1	.0	.0	.0	.1	.1	.0	.0	-.1	-.1	-.1	-.2	-.2	-.2	-.1	-.1	.0	-.1	.0	.1	.1	.1	.1	.1	.0	-.1	-.2	-.2	-.1	-.1	-.1
-.3	-.3	-.2	-.2	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.1	-.1	-.2	-.2	-.2	-.3	-.3	-.3	-.4	-.5	-.5	-.4	-.4
-.5	-.4	-.4	-.4	-.4	-.3	-.4	-.5	-.5	-.4	-.3	-.4	-.4	-.5	-.5	-.5	-.5	-.4	-.4	-.4	-.4	-.6	-.6	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.5	-.5	-.5	-.5
-.5	-.5	-.5	-.5	-.5	-.4	-.5	-.5	-.4	-.3	-.4	-.4	-.4	-.5	-.7	-.7	-.6	-.6	-.5	-.5	-.6	-.8	-.7	-.6	-.5	-.5	-.5	-.5	-.4	-.4	-.4	-.4	-.6	-.6	-.6	-.6
-.6	-.5	-.6	-.6	-.5	-.4	-.5	-.5	-.4	-.3	-.5	-.6	-.6	-.6	-.7	-.7	-.7	-.6	-.6	-.7	-.8	-.8	-.6	-.6	-.5	-.5	-.4	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.6
-.5	-.5	-.5	-.5	-.4	-.3	-.4	-.4	-.4	-.3	-.4	-.5	-.6	-.6	-.6	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.6	-.5	-.5	-.4	-.4	-.4	-.4	-.5	-.5	-.5	-.6	-.6	-.6	-.5
-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.3	-.3	-.2	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.3	-.3
-.1	-.1	-.1	.0	.0	.0	.0	.0	-.1	-.1	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.2	-.2	-.3	-.2	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.1	-.2	-.1	-.1	-.1
.0	.0	.0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.1	.1	.1	.1	.0	.0	.0	.0	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.1	.0
.1	.2	.2	.2	.2	.3	.3	.3	.3	.2	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.4	.4	.3	.2	.2
.4	.4	.4	.4	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.5	.5	.5	.5	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.3	.3	.4	.4	.4	.4	.3	.4	.4	.4	.5	.4	.5	.5	.5
.6	.6	.6	.6	.6	.6	.6	.6	.5	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

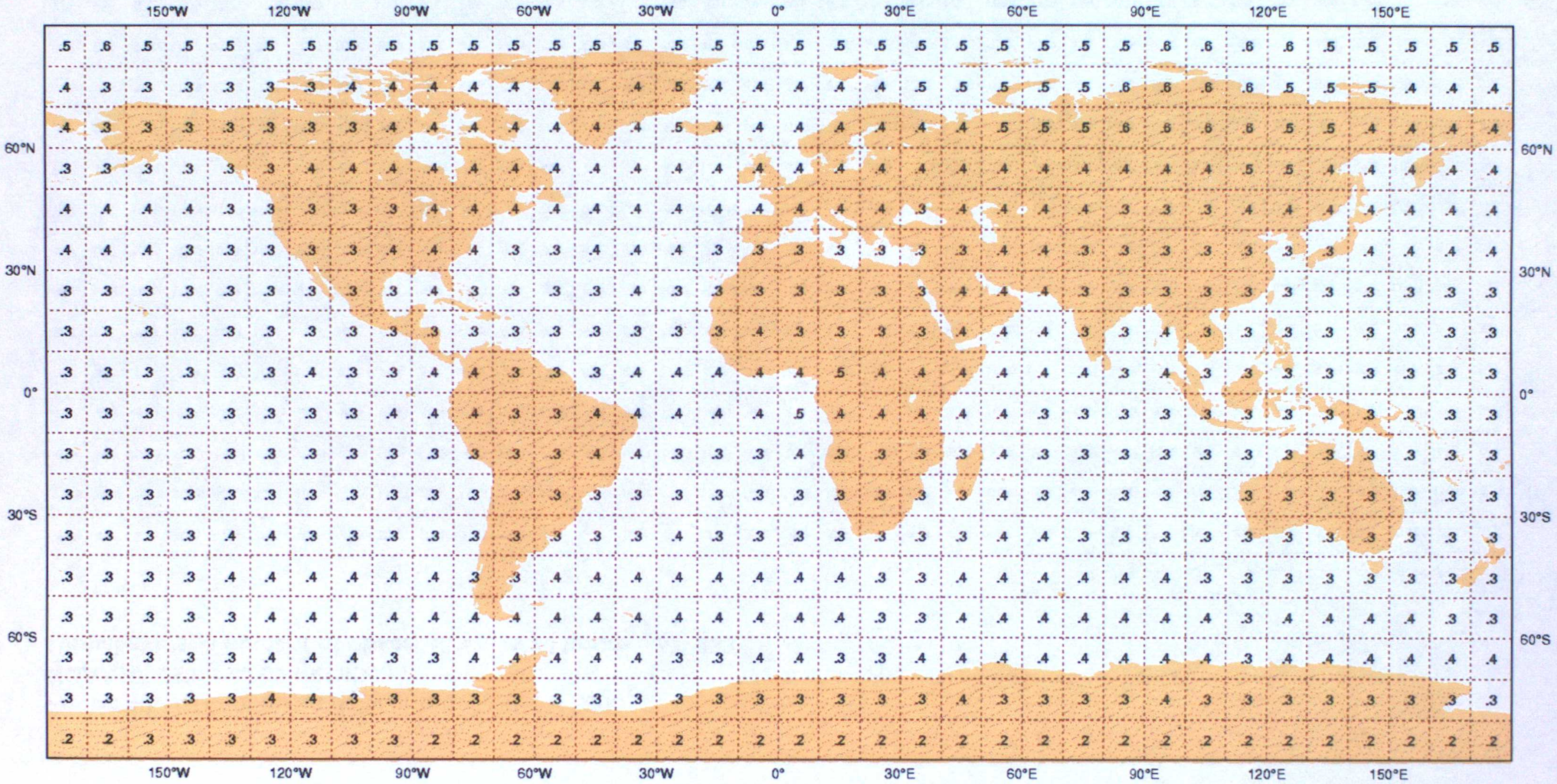
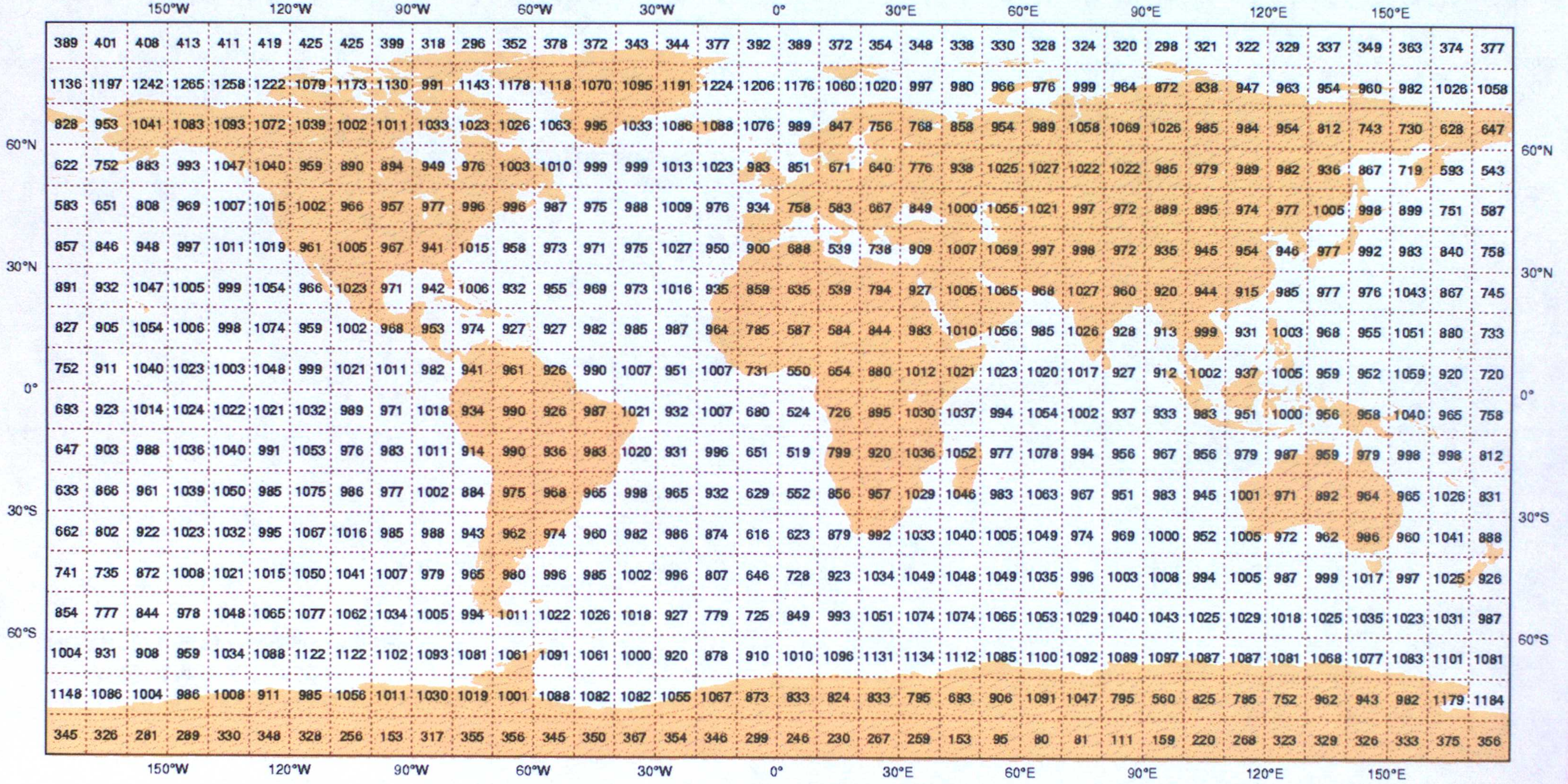
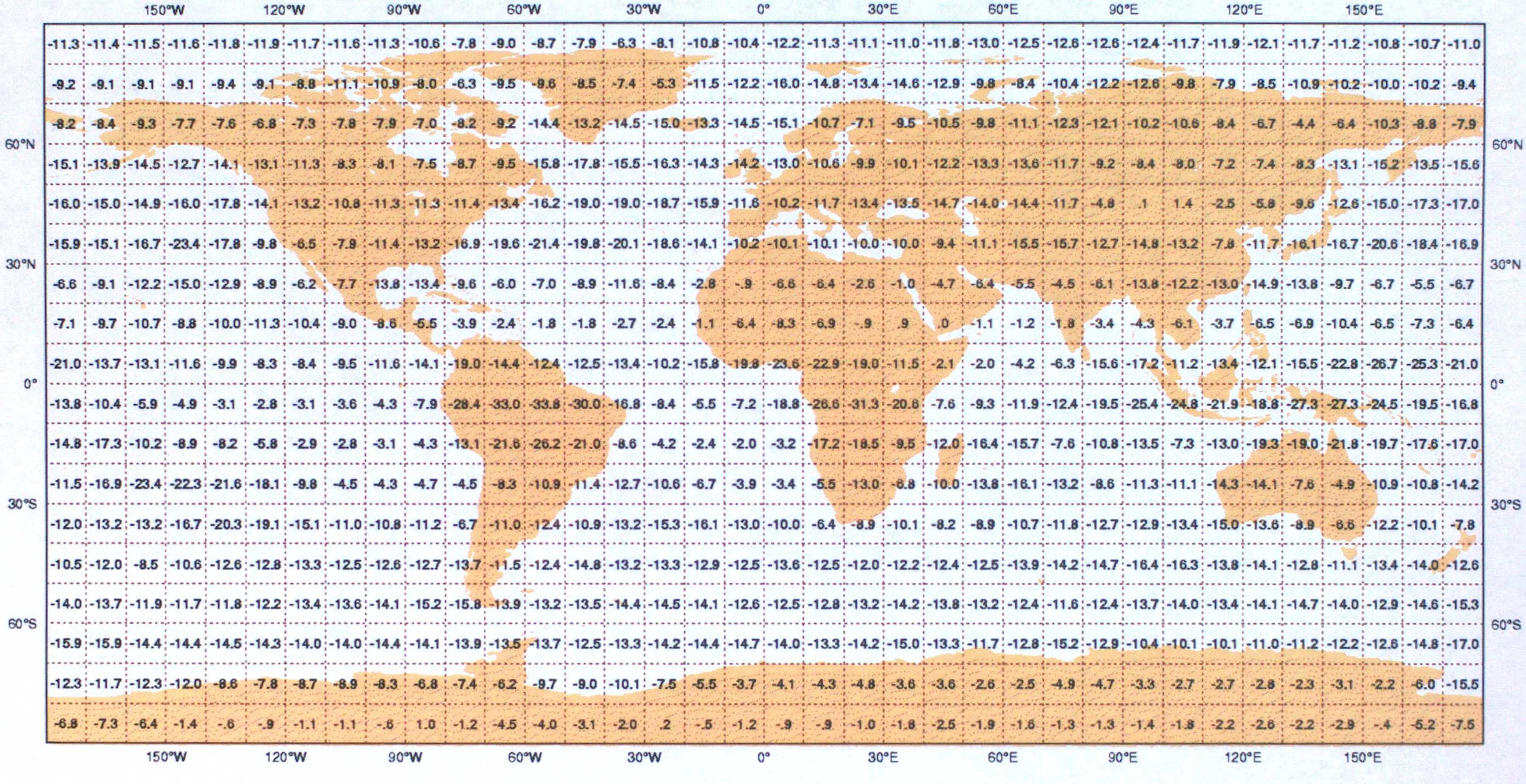

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.5 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5 .5 .5 .5
.4 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5 .5 .4 .4 .4
.4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .6 .6 .6 .6 .5 .5 .4 .4 .4 .4
.3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4
.4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4
.3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .4 .4 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .4 .3 .3 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .3
.3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .3 .3 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4
.3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3
.2 .2 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2

Figure 40. ATOVS mean daily count. MARCH 2005
NOAA16, using all observations
Global average number of observations in 24 hours = 574933



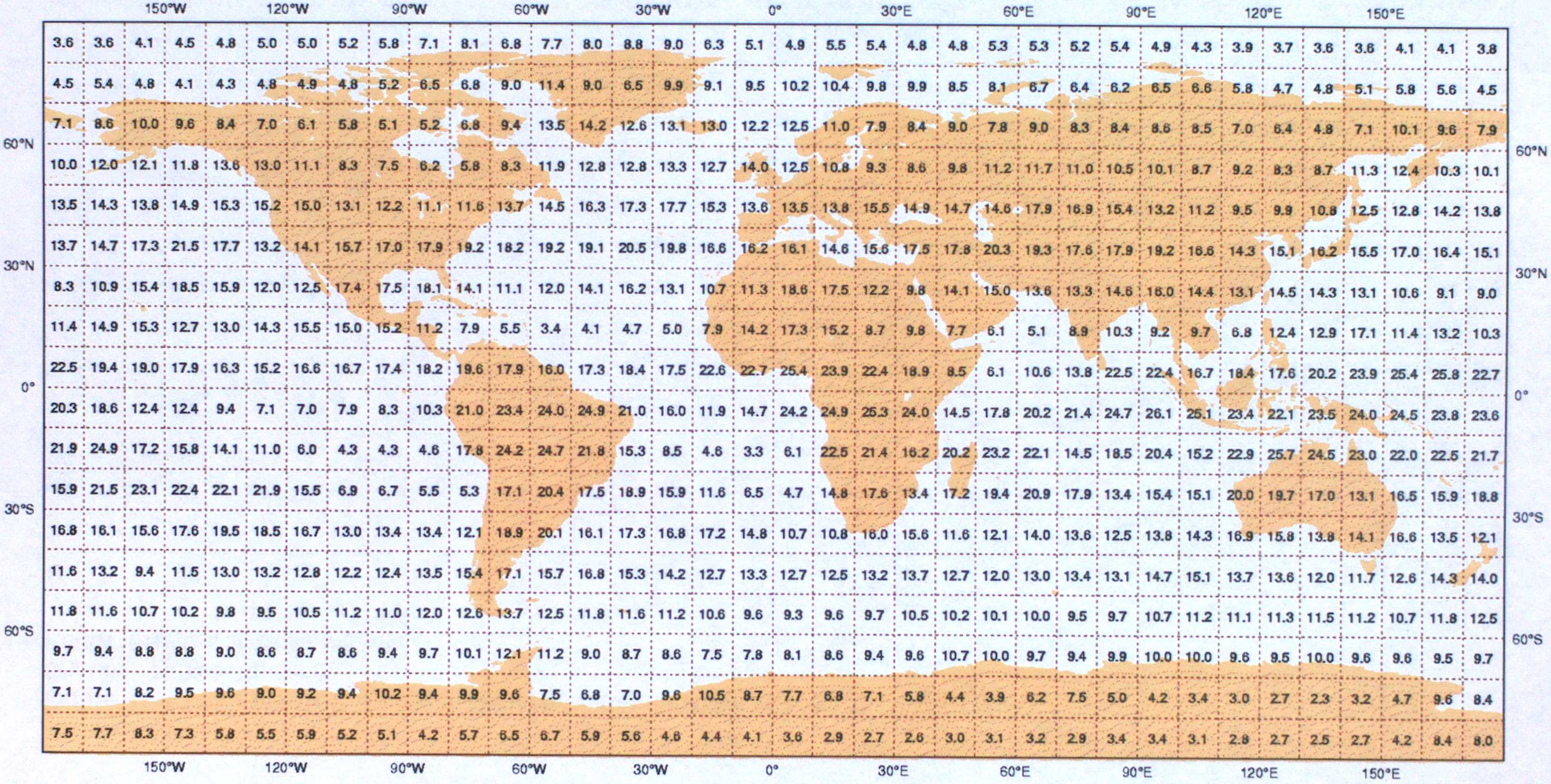
389	401	408	413	411	419	425	425	399	318	296	352	378	372	343	344	377	392	389	372	354	348	338	330	328	324	320	298	321	322	329	337	349	363	374	377
1136	1197	1242	1265	1258	1222	1079	1173	1130	991	1143	1178	1118	1070	1095	1191	1224	1206	1176	1060	1020	997	980	966	976	999	964	872	838	947	963	954	960	982	1026	1058
828	953	1041	1083	1093	1072	1039	1002	1011	1033	1023	1026	1063	995	1033	1086	1088	1076	989	847	756	768	858	954	989	1058	1069	1026	985	984	954	812	743	730	628	647
622	752	883	993	1047	1040	959	890	894	949	976	1003	1010	999	999	1013	1023	983	851	671	640	776	938	1025	1027	1022	1022	985	979	989	982	936	867	719	593	543
583	651	808	969	1007	1015	1002	966	957	977	996	996	987	975	988	1009	976	934	758	583	667	849	1000	1055	1021	997	972	889	895	974	977	1005	998	899	751	587
857	846	948	997	1011	1019	961	1005	967	941	1015	958	973	971	975	1027	950	900	688	539	738	909	1007	1069	997	998	972	935	945	954	946	977	992	983	840	758
891	932	1047	1005	999	1054	966	1023	971	942	1006	932	955	969	973	1016	935	859	635	539	794	927	1005	1065	968	1027	960	920	944	915	985	977	976	1043	867	745
827	905	1054	1006	998	1074	959	1002	968	953	974	927	927	982	985	987	964	785	587	584	844	983	1010	1056	985	1026	928	913	999	931	1003	968	955	1051	880	733
752	911	1040	1023	1003	1048	999	1021	1011	982	941	961	926	990	1007	951	1007	731	550	654	880	1012	1021	1023	1020	1017	927	912	1002	937	1005	959	952	1059	920	720
693	923	1014	1024	1022	1021	1032	989	971	1018	934	990	926	987	1021	932	1007	680	524	726	895	1030	1037	994	1054	1002	937	933	983	951	1000	956	958	1040	965	758
647	903	988	1036	1040	991	1053	976	983	1011	914	990	936	983	1020	931	996	651	519	799	920	1036	1052	977	1078	994	956	967	956	979	987	959	979	998	998	812
633	866	961	1039	1050	985	1075	986	977	1002	884	975	968	965	998	965	932	629	552	856	957	1029	1046	983	1063	967	951	983	945	1001	971	892	964	965	1026	831
662	802	922	1023	1032	995	1067	1016	985	988	943	962	974	960	982	986	874	616	623	879	992	1033	1040	1005	1049	974	969	1000	952	1005	972	962	986	960	1041	888
741	735	872	1008	1021	1015	1050	1041	1007	979	965	980	996	985	1002	996	807	646	728	923	1034	1049	1048	1049	1035	996	1003	1008	994	1005	987	999	1017	997	1025	926
854	777	844	978	1048	1065	1077	1062	1034	1005	994	1011	1022	1026	1018	927	779	725	849	993	1051	1074	1074	1065	1053	1029	1040	1043	1025	1029	1018	1025	1035	1023	1031	987
1004	931	908	959	1034	1088	1122	1122	1102	1093	1081	1061	1091	1061	1000	920	878	910	1010	1096	1131	1134	1112	1085	1100	1092	1089	1097	1087	1087	1081	1068	1077	1083	1101	1081
1148	1086	1004	986	1008	911	985	1056	1011	1030	1019	1001	1088	1082	1082	1055	1067	873	833	824	833	795	693	906	1091	1047	795	560	825	785	752	962	943	982	1179	1184
345	326	281	289	330	348	328	256	153	317	355	356	345	350	367	354	346	299	246	230	267	259	153	95	80	81	111	159	220	268	323	329	326	333	375	356

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS8 (Surface)
NOAA16, using all observations



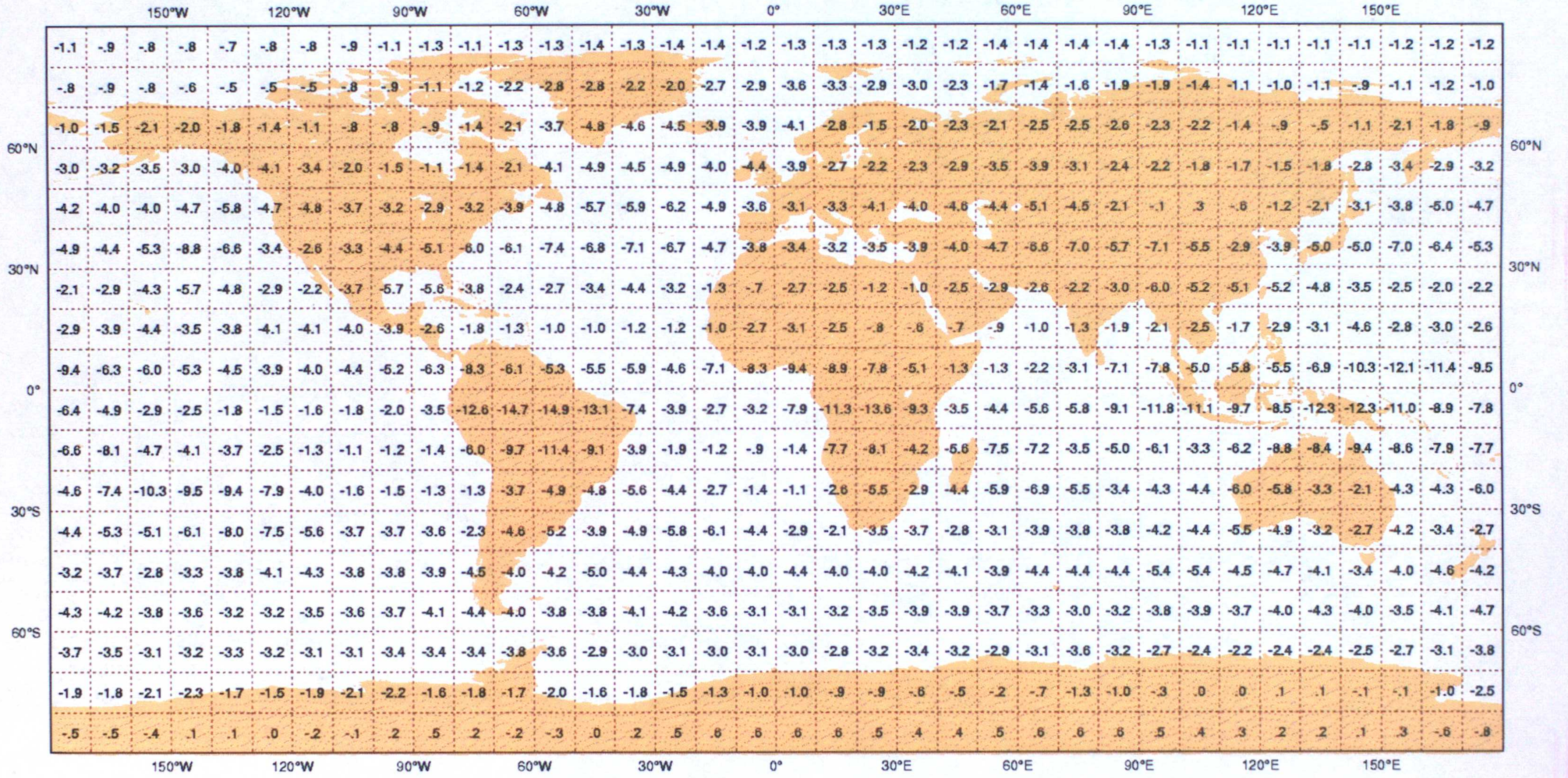
-11.3	-11.4	-11.5	-11.6	-11.8	-11.9	-11.7	-11.6	-11.3	-10.6	-7.8	-9.0	-8.7	-7.9	-6.3	-8.1	-10.8	-10.4	-12.2	-11.3	-11.1	-11.0	-11.8	-13.0	-12.5	-12.6	-12.6	-12.4	-11.7	-11.9	-12.1	-11.7	-11.2	-10.8	-10.7	-11.0
-9.2	-9.1	-9.1	-9.1	-9.4	-9.1	-8.8	-11.1	-10.9	-8.0	-6.3	-9.5	-9.6	-8.5	-7.4	-5.3	-11.5	-12.2	-16.0	-14.8	-13.4	-14.6	-12.9	-9.8	-8.4	-10.4	-12.2	-12.6	-9.8	-7.9	-8.5	-10.9	-10.2	-10.0	-10.2	-9.4
-8.2	-8.4	-9.3	-7.7	-7.6	-6.8	-7.3	-7.8	-7.9	-7.0	-8.2	-9.2	-14.4	-13.2	-14.5	-15.0	-13.3	-14.5	-15.1	-10.7	-7.1	-9.5	-10.5	-9.8	-11.1	-12.3	-12.1	-10.2	-10.6	-8.4	-6.7	-4.4	-6.4	-10.3	-8.8	-7.9
-15.1	-13.9	-14.5	-12.7	-14.1	-13.1	-11.3	-8.3	-8.1	-7.5	-8.7	-9.5	-15.8	-17.8	-15.5	-16.3	-14.3	-14.2	-13.0	-10.6	-9.9	-10.1	-12.2	-13.3	-13.6	-11.7	-9.2	-8.4	-8.0	-7.2	-7.4	-8.3	-13.1	-15.2	-13.5	-15.6
-16.0	-15.0	-14.9	-16.0	-17.8	-14.1	-13.2	-10.8	-11.3	-11.3	-11.4	-13.4	-16.2	-19.0	-19.0	-18.7	-15.9	-11.6	-10.2	-11.7	-13.4	-13.5	-14.7	-14.0	-14.4	-11.7	-4.8	.1	1.4	-2.5	-5.8	-9.6	-12.6	-15.0	-17.3	-17.0
-15.9	-15.1	-16.7	-23.4	-17.8	-9.8	-6.5	-7.9	-11.4	-13.2	-16.9	-19.6	-21.4	-19.8	-20.1	-18.6	-14.1	-10.2	-10.1	-10.1	-10.0	-10.0	-9.4	-11.1	-15.5	-15.7	-12.7	-14.8	-13.2	-7.8	-11.7	-16.1	-16.7	-20.6	-18.4	-16.9
-6.6	-9.1	-12.2	-15.0	-12.9	-8.9	-6.2	-7.7	-13.8	-13.4	-9.6	-6.0	-7.0	-8.9	-11.6	-8.4	-2.8	-.9	-6.6	-6.4	-2.6	-1.0	-4.7	-6.4	-5.5	-4.5	-6.1	-13.8	-12.2	-13.0	-14.9	-13.8	-9.7	-6.7	-5.5	-6.7
-7.1	-9.7	-10.7	-8.8	-10.0	-11.3	-10.4	-9.0	-8.6	-5.5	-3.9	-2.4	-1.8	-1.8	-2.7	-2.4	-1.1	-6.4	-8.3	-6.9	-.9	.9	.0	-1.1	-1.2	-1.8	-3.4	-4.3	-6.1	-3.7	-6.5	-6.9	-10.4	-6.5	-7.3	-6.4
-21.0	-13.7	-13.1	-11.6	-9.9	-8.3	-8.4	-9.5	-11.6	-14.1	-19.0	-14.4	-12.4	-12.5	-13.4	-10.2	-15.8	-19.8	-23.6	-22.9	-19.0	-11.5	-2.1	-2.0	-4.2	-6.3	-15.6	-17.2	-11.2	-13.4	-12.1	-15.5	-22.8	-26.7	-25.3	-21.0
-13.8	-10.4	-5.9	-4.9	-3.1	-2.8	-3.1	-3.6	-4.3	-7.9	-28.4	-33.0	-33.8	-30.0	-16.8	-8.4	-5.5	-7.2	-18.8	-26.6	-31.3	-20.6	-7.6	-9.3	-11.9	-12.4	-19.5	-25.4	-24.8	-21.9	-18.8	-27.3	-27.3	-24.5	-19.5	-16.8
-14.8	-17.3	-10.2	-8.9	-8.2	-5.8	-2.9	-2.8	-3.1	-4.3	-13.1	-21.6	-26.2	-21.0	-8.6	-4.2	-2.4	-2.0	-3.2	-17.2	-18.5	-9.5	-12.0	-16.4	-15.7	-7.6	-10.8	-13.5	-7.3	-13.0	-19.3	-19.0	-21.8	-19.7	-17.6	-17.0
-11.5	-16.9	-23.4	-22.3	-21.6	-18.1	-9.8	-4.5	-4.3	-4.7	-4.5	-8.3	-10.9	-11.4	-12.7	-10.6	-6.7	-3.9	-3.4	-5.5	-13.0	-6.8	-10.0	-13.8	-16.1	-13.2	-8.6	-11.3	-11.1	-14.3	-14.1	-7.6	-4.9	-10.9	-10.8	-14.2
-12.0	-13.2	-13.2	-16.7	-20.3	-19.1	-15.1	-11.0	-10.8	-11.2	-6.7	-11.0	-12.4	-10.9	-13.2	-15.3	-16.1	-13.0	-10.0	-6.4	-8.9	-10.1	-8.2	-8.9	-10.7	-11.8	-12.7	-12.9	-13.4	-15.0	-13.6	-8.9	-6.6	-12.2	-10.1	-7.8
-10.5	-12.0	-8.5	-10.6	-12.6	-12.8	-13.3	-12.5	-12.6	-12.7	-13.7	-11.5	-12.4	-14.8	-13.2	-13.3	-12.9	-12.5	-13.6	-12.5	-12.0	-12.2	-12.4	-12.5	-13.9	-14.2	-14.7	-16.4	-16.3	-13.8	-14.1	-12.8	-11.1	-13.4	-14.0	-12.6
-14.0	-13.7	-11.9	-11.7	-11.8	-12.2	-13.4	-13.6	-14.1	-15.2	-15.8	-13.9	-13.2	-13.5	-14.4	-14.5	-14.1	-12.6	-12.5	-12.8	-13.2	-14.2	-13.8	-13.2	-12.4	-11.6	-12.4	-13.7	-14.0	-13.4	-14.1	-14.7	-14.0	-12.9	-14.6	-15.3
-15.9	-15.9	-14.4	-14.4	-14.5	-14.3	-14.0	-14.0	-14.4	-14.1	-13.9	-13.5	-13.7	-12.5	-13.3	-14.2	-14.4	-14.7	-14.0	-13.3	-14.2	-15.0	-13.3	-11.7	-12.8	-15.2	-12.9	-10.4	-10.1	-10.1	-11.0	-11.2	-12.2	-12.6	-14.8	-17.0
-12.3	-11.7	-12.3	-12.0	-8.6	-7.8	-8.7	-8.9	-8.3	-6.8	-7.4	-6.2	-9.7	-9.0	-10.1	-7.5	-5.5	-3.7	-4.1	-4.3	-4.8	-3.6	-3.6	-2.6	-2.5	-4.9	-4.7	-3.3	-2.7	-2.7	-2.8	-2.3	-3.1	-2.2	-6.0	-15.5
-6.8	-7.3	-6.4	-1.4	-.6	-.9	-1.1	-1.1	-.6	1.0	-1.2	-4.5	-4.0	-3.1	-2.0	.2	-.5	-1.2	-.9	-.9	-1.0	-1.8	-2.5	-1.9	-1.6	-1.3	-1.3	-1.4	-1.8	-2.2	-2.6	-2.2	-2.9	-.4	-5.2	-7.5

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS8 (Surface)
NOAA16, using all observations



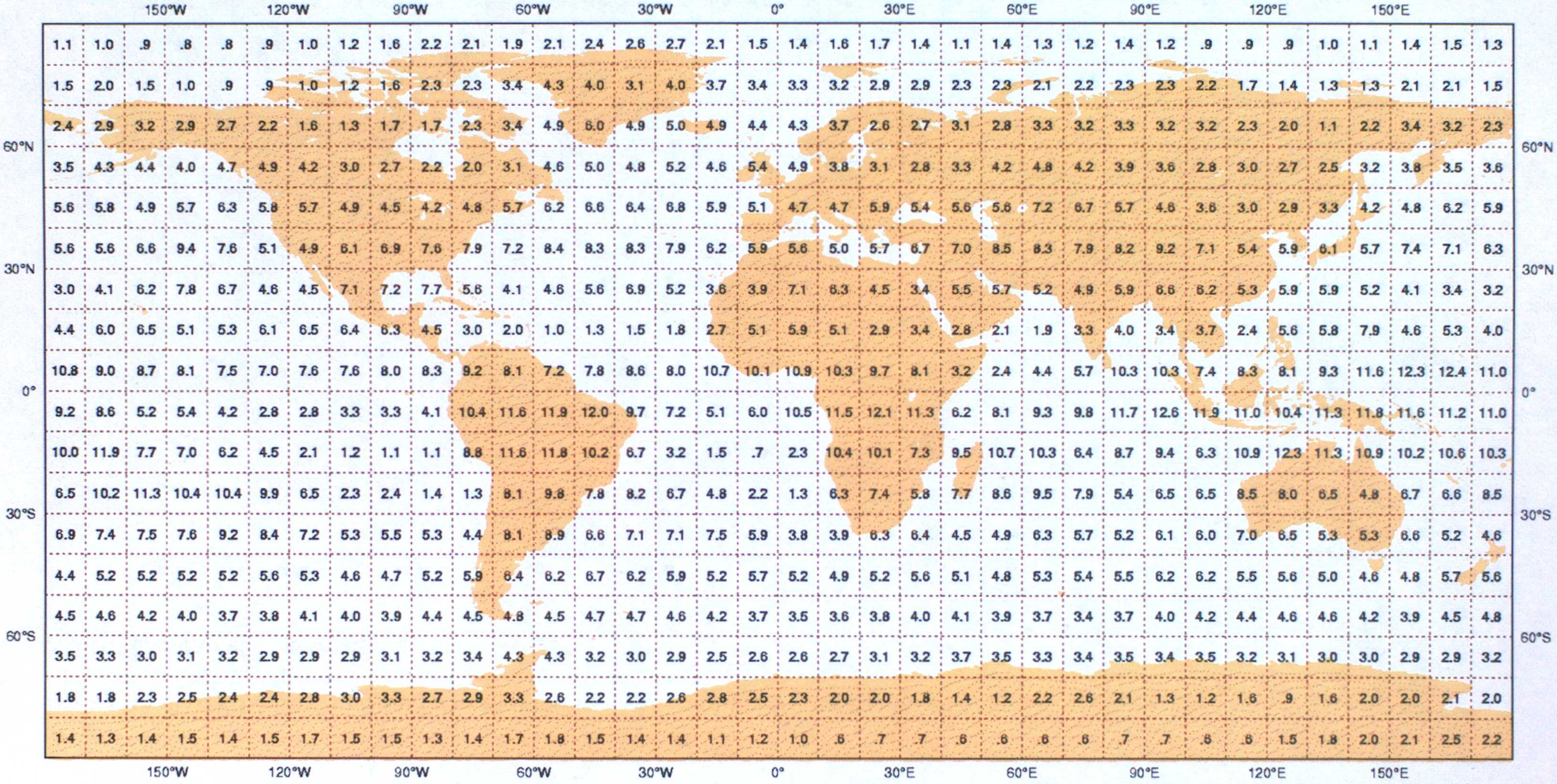
3.6	3.6	4.1	4.5	4.8	5.0	5.0	5.2	5.8	7.1	8.1	6.8	7.7	8.0	8.8	9.0	6.3	5.1	4.9	5.5	5.4	4.8	4.8	5.3	5.3	5.2	5.4	4.9	4.3	3.9	3.7	3.6	3.6	4.1	4.1	3.8
4.5	5.4	4.8	4.1	4.3	4.8	4.9	4.8	5.2	6.5	6.8	9.0	11.4	9.0	6.5	9.9	9.1	9.5	10.2	10.4	9.8	9.9	8.5	8.1	6.7	6.4	6.2	6.5	6.6	5.8	4.7	4.8	5.1	5.8	5.6	4.5
7.1	8.6	10.0	9.6	8.4	7.0	6.1	5.8	5.1	5.2	6.8	9.4	13.5	14.2	12.6	13.1	13.0	12.2	12.5	11.0	7.9	8.4	9.0	7.8	9.0	8.3	8.4	8.6	8.5	7.0	6.4	4.8	7.1	10.1	9.6	7.9
10.0	12.0	12.1	11.8	13.6	13.0	11.1	8.3	7.5	6.2	5.8	8.3	11.9	12.8	12.8	13.3	12.7	14.0	12.5	10.8	9.3	8.6	9.8	11.2	11.7	11.0	10.5	10.1	8.7	9.2	8.3	8.7	11.3	12.4	10.3	10.1
13.5	14.3	13.8	14.9	15.3	15.2	15.0	13.1	12.2	11.1	11.6	13.7	14.5	16.3	17.3	17.7	15.3	13.6	13.5	13.8	15.5	14.9	14.7	14.6	17.9	16.9	15.4	13.2	11.2	9.5	9.9	10.8	12.5	12.8	14.2	13.8
13.7	14.7	17.3	21.5	17.7	13.2	14.1	15.7	17.0	17.9	19.2	18.2	19.2	19.1	20.5	19.8	16.6	16.2	16.1	14.6	15.6	17.5	17.8	20.3	19.3	17.6	17.9	19.2	16.6	14.3	15.1	16.2	15.5	17.0	16.4	15.1
8.3	10.9	15.4	18.5	15.9	12.0	12.5	17.4	17.5	18.1	14.1	11.1	12.0	14.1	16.2	13.1	10.7	11.3	18.6	17.5	12.2	9.8	14.1	15.0	13.6	13.3	14.6	16.0	14.4	13.1	14.5	14.3	13.1	10.6	9.1	9.0
11.4	14.9	15.3	12.7	13.0	14.3	15.5	15.0	15.2	11.2	7.9	5.5	3.4	4.1	4.7	5.0	7.9	14.2	17.3	15.2	8.7	9.8	7.7	6.1	5.1	8.9	10.3	9.2	9.7	6.8	12.4	12.9	17.1	11.4	13.2	10.3
22.5	19.4	19.0	17.9	16.3	15.2	16.6	16.7	17.4	18.2	19.6	17.9	16.0	17.3	18.4	17.5	22.6	22.7	25.4	23.9	22.4	18.9	8.5	6.1	10.6	13.8	22.5	22.4	16.7	18.4	17.6	20.2	23.9	25.4	25.8	22.7
20.3	18.6	12.4	12.4	9.4	7.1	7.0	7.9	8.3	10.3	21.0	23.4	24.0	24.9	21.0	16.0	11.9	14.7	24.2	24.9	25.3	24.0	14.5	17.8	20.2	21.4	24.7	26.1	25.1	23.4	22.1	23.5	24.0	24.5	23.8	23.6
21.9	24.9	17.2	15.8	14.1	11.0	6.0	4.3	4.3	4.6	17.8	24.2	24.7	21.8	15.3	8.5	4.6	3.3	6.1	22.5	21.4	16.2	20.2	23.2	22.1	14.5	18.5	20.4	15.2	22.9	25.7	24.5	23.0	22.0	22.5	21.7
15.9	21.5	23.1	22.4	22.1	21.9	15.5	6.9	6.7	5.5	5.3	17.1	20.4	17.5	18.9	15.9	11.6	6.5	4.7	14.8	17.6	13.4	17.2	19.4	20.9	17.9	13.4	15.4	15.1	20.0	19.7	17.0	13.1	16.5	15.9	18.8
16.8	16.1	15.6	17.6	19.5	18.5	16.7	13.0	13.4	13.4	12.1	18.9	20.1	16.1	17.3	16.8	17.2	14.8	10.7	10.8	16.0	15.6	11.6	12.1	14.0	13.6	12.5	13.8	14.3	16.9	15.8	13.8	14.1	16.6	13.5	12.1
11.6	13.2	9.4	11.5	13.0	13.2	12.8	12.2	12.4	13.5	15.4	17.1	15.7	16.8	15.3	14.2	12.7	13.3	12.7	12.5	13.2	13.7	12.7	12.0	13.0	13.4	13.1	14.7	15.1	13.7	13.6	12.0	11.7	12.6	14.3	14.0
11.8	11.6	10.7	10.2	9.8	9.5	10.5	11.2	11.0	12.0	12.6	13.7	12.5	11.8	11.6	11.2	10.6	9.6	9.3	9.6	9.7	10.5	10.2	10.1	10.0	9.5	9.7	10.7	11.2	11.1	11.3	11.5	11.2	10.7	11.8	12.5
9.7	9.4	8.8	8.8	9.0	8.6	8.7	8.6	9.4	9.7	10.1	12.1	11.2	9.0	8.7	8.6	7.5	7.8	8.1	8.6	9.4	9.6	10.7	10.0	9.7	9.4	9.9	10.0	10.0	9.6	9.5	10.0	9.6	9.6	9.5	9.7
7.1	7.1	8.2	9.5	9.6	9.0	9.2	9.4	10.2	9.4	9.9	9.6	7.5	6.8	7.0	9.6	10.5	8.7	7.7	6.8	7.1	5.8	4.4	3.9	6.2	7.5	5.0	4.2	3.4	3.0	2.7	2.3	3.2	4.7	9.6	8.4
7.5	7.7	8.3	7.3	5.8	5.5	5.9	5.2	5.1	4.2	5.7	6.5	6.7	5.9	5.6	4.6	4.4	4.1	3.6	2.9	2.7	2.6	3.0	3.1	3.2	2.9	3.4	3.4	3.1	2.8	2.7	2.5	2.7	4.2	8.4	8.0

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



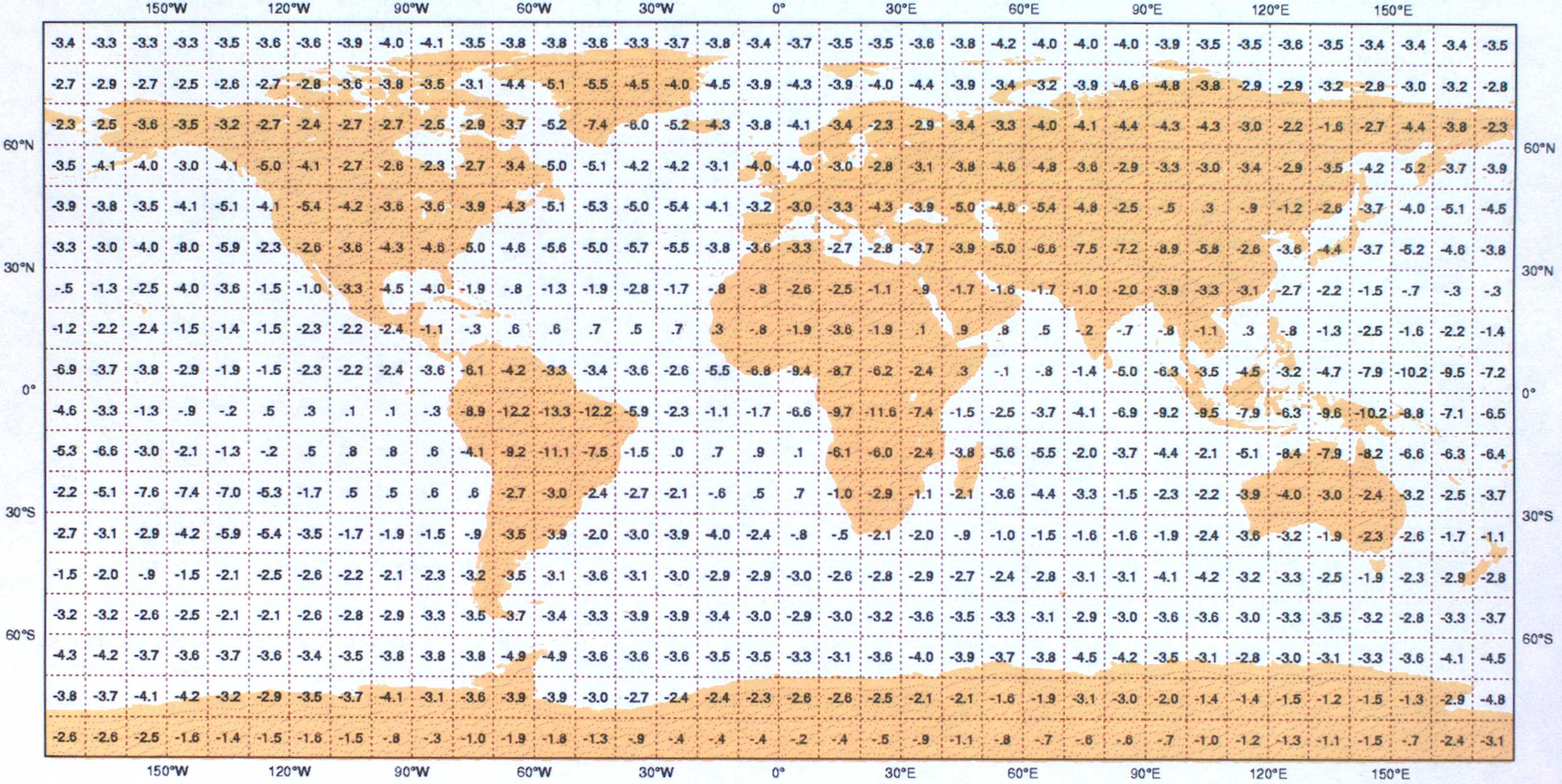
-1.1	-.9	-.8	-.8	-.7	-.8	-.8	-.9	-1.1	-1.3	-1.1	-1.3	-1.3	-1.4	-1.3	-1.4	-1.4	-1.2	-1.3	-1.3	-1.3	-1.2	-1.2	-1.4	-1.4	-1.4	-1.4	-1.3	-1.1	-1.1	-1.1	-1.1	-1.1	-1.2	-1.2	-1.2
-.8	-.9	-.8	-.6	-.5	-.5	-.5	-.8	-.9	-1.1	-1.2	-2.2	-2.8	-2.8	-2.2	-2.0	-2.7	-2.9	-3.6	-3.3	-2.9	-3.0	-2.3	-1.7	-1.4	-1.6	-1.9	-1.9	-1.4	-1.1	-1.0	-1.1	-.9	-1.1	-1.2	-1.0
-1.0	-1.5	-2.1	-2.0	-1.8	-1.4	-1.1	-.8	-.8	-.9	-1.4	-2.1	-3.7	-4.8	-4.6	-4.5	-3.9	-3.9	-4.1	-2.8	-1.5	-2.0	-2.3	-2.1	-2.5	-2.5	-2.6	-2.3	-2.2	-1.4	-.9	-.5	-1.1	-2.1	-1.8	-.9
-3.0	-3.2	-3.5	-3.0	-4.0	-4.1	-3.4	-2.0	-1.5	-1.1	-1.4	-2.1	-4.1	-4.9	-4.5	-4.9	-4.0	-4.4	-3.9	-2.7	-2.2	-2.3	-2.9	-3.5	-3.9	-3.1	-2.4	-2.2	-1.8	-1.7	-1.5	-1.8	-2.8	-3.4	-2.9	-3.2
-4.2	-4.0	-4.0	-4.7	-5.8	-4.7	-4.8	-3.7	-3.2	-2.9	-3.2	-3.9	-4.8	-5.7	-5.9	-6.2	-4.9	-3.6	-3.1	-3.3	-4.1	-4.0	-4.6	-4.4	-5.1	-4.5	-2.1	-.1	.3	-.6	-1.2	-2.1	-3.1	-3.8	-5.0	-4.7
-4.9	-4.4	-5.3	-8.8	-6.6	-3.4	-2.6	-3.3	-4.4	-5.1	-6.0	-6.1	-7.4	-6.8	-7.1	-6.7	-4.7	-3.8	-3.4	-3.2	-3.5	-3.9	-4.0	-4.7	-6.6	-7.0	-5.7	-7.1	-5.5	-2.9	-3.9	-5.0	-5.0	-7.0	-6.4	-5.3
-2.1	-2.9	-4.3	-5.7	-4.8	-2.9	-2.2	-3.7	-5.7	-5.6	-3.8	-2.4	-2.7	-3.4	-4.4	-3.2	-1.3	-.7	-2.7	-2.5	-1.2	-1.0	-2.5	-2.9	-2.6	-2.2	-3.0	-6.0	-5.2	-5.1	-5.2	-4.8	-3.5	-2.5	-2.0	-2.2
-2.9	-3.9	-4.4	-3.5	-3.8	-4.1	-4.1	-4.0	-3.9	-2.6	-1.8	-1.3	-1.0	-1.0	-1.2	-1.2	-1.0	-2.7	-3.1	-2.5	-.8	-.6	-.7	-.9	-1.0	-1.3	-1.9	-2.1	-2.5	-1.7	-2.9	-3.1	-4.6	-2.8	-3.0	-2.6
-9.4	-6.3	-6.0	-5.3	-4.5	-3.9	-4.0	-4.4	-5.2	-6.3	-8.3	-6.1	-5.3	-5.5	-5.9	-4.6	-7.1	-8.3	-9.4	-8.9	-7.8	-5.1	-1.3	-1.3	-2.2	-3.1	-7.1	-7.8	-5.0	-5.8	-5.5	-6.9	-10.3	-12.1	-11.4	-9.5
-6.4	-4.9	-2.9	-2.5	-1.8	-1.5	-1.6	-1.8	-2.0	-3.5	-12.6	-14.7	-14.9	-13.1	-7.4	-3.9	-2.7	-3.2	-7.9	-11.3	-13.6	-9.3	-3.5	-4.4	-5.6	-5.8	-9.1	-11.8	-11.1	-9.7	-8.5	-12.3	-12.3	-11.0	-8.9	-7.8
-6.6	-8.1	-4.7	-4.1	-3.7	-2.5	-1.3	-1.1	-1.2	-1.4	-6.0	-9.7	-11.4	-9.1	-3.9	-1.9	-1.2	-.9	-1.4	-7.7	-8.1	-4.2	-5.6	-7.5	-7.2	-3.5	-5.0	-6.1	-3.3	-6.2	-8.8	-8.4	-9.4	-8.6	-7.9	-7.7
-4.6	-7.4	-10.3	-9.5	-9.4	-7.9	-4.0	-1.6	-1.5	-1.3	-1.3	-3.7	-4.9	-4.8	-5.6	-4.4	-2.7	-1.4	-1.1	-2.6	-5.5	-2.9	-4.4	-5.9	-6.9	-5.5	-3.4	-4.3	-4.4	-6.0	-5.8	-3.3	-2.1	-4.3	-4.3	-6.0
-4.4	-5.3	-5.1	-6.1	-8.0	-7.5	-5.6	-3.7	-3.7	-3.6	-2.3	-4.6	-5.2	-3.9	-4.9	-5.8	-6.1	-4.4	-2.9	-2.1	-3.5	-3.7	-2.8	-3.1	-3.9	-3.8	-3.8	-4.2	-4.4	-5.5	-4.9	-3.2	-2.7	-4.2	-3.4	-2.7
-3.2	-3.7	-2.8	-3.3	-3.8	-4.1	-4.3	-3.8	-3.8	-3.9	-4.5	-4.0	-4.2	-5.0	-4.4	-4.3	-4.0	-4.0	-4.4	-4.0	-4.0	-4.2	-4.1	-3.9	-4.4	-4.4	-4.4	-5.4	-5.4	-4.5	-4.7	-4.1	-3.4	-4.0	-4.6	-4.2
-4.3	-4.2	-3.8	-3.6	-3.2	-3.2	-3.5	-3.6	-3.7	-4.1	-4.4	-4.0	-3.8	-3.8	-4.1	-4.2	-3.6	-3.1	-3.1	-3.2	-3.5	-3.9	-3.9	-3.7	-3.3	-3.0	-3.2	-3.8	-3.9	-3.7	-4.0	-4.3	-4.0	-3.5	-4.1	-4.7
-3.7	-3.5	-3.1	-3.2	-3.3	-3.2	-3.1	-3.1	-3.4	-3.4	-3.4	-3.8	-3.6	-2.9	-3.0	-3.1	-3.0	-3.1	-3.0	-2.8	-3.2	-3.4	-3.2	-2.9	-3.1	-3.6	-3.2	-2.7	-2.4	-2.2	-2.4	-2.4	-2.5	-2.7	-3.1	-3.8
-1.9	-1.8	-2.1	-2.3	-1.7	-1.5	-1.9	-2.1	-2.2	-1.6	-1.8	-1.7	-2.0	-1.6	-1.8	-1.5	-1.3	-1.0	-1.0	-.9	-.9	-.6	-.5	-.2	-.7	-1.3	-1.0	-.3	.0	.0	.1	.1	-.1	-.1	-1.0	-2.5
-.5	-.5	-.4	.1	.1	.0	-.2	-.1	.2	.5	.2	-.2	-.3	.0	.2	.5	.6	.6	.6	.6	.5	.4	.4	.5	.6	.6	.6	.5	.4	.3	.2	.2	.1	.3	-.6	-.8

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



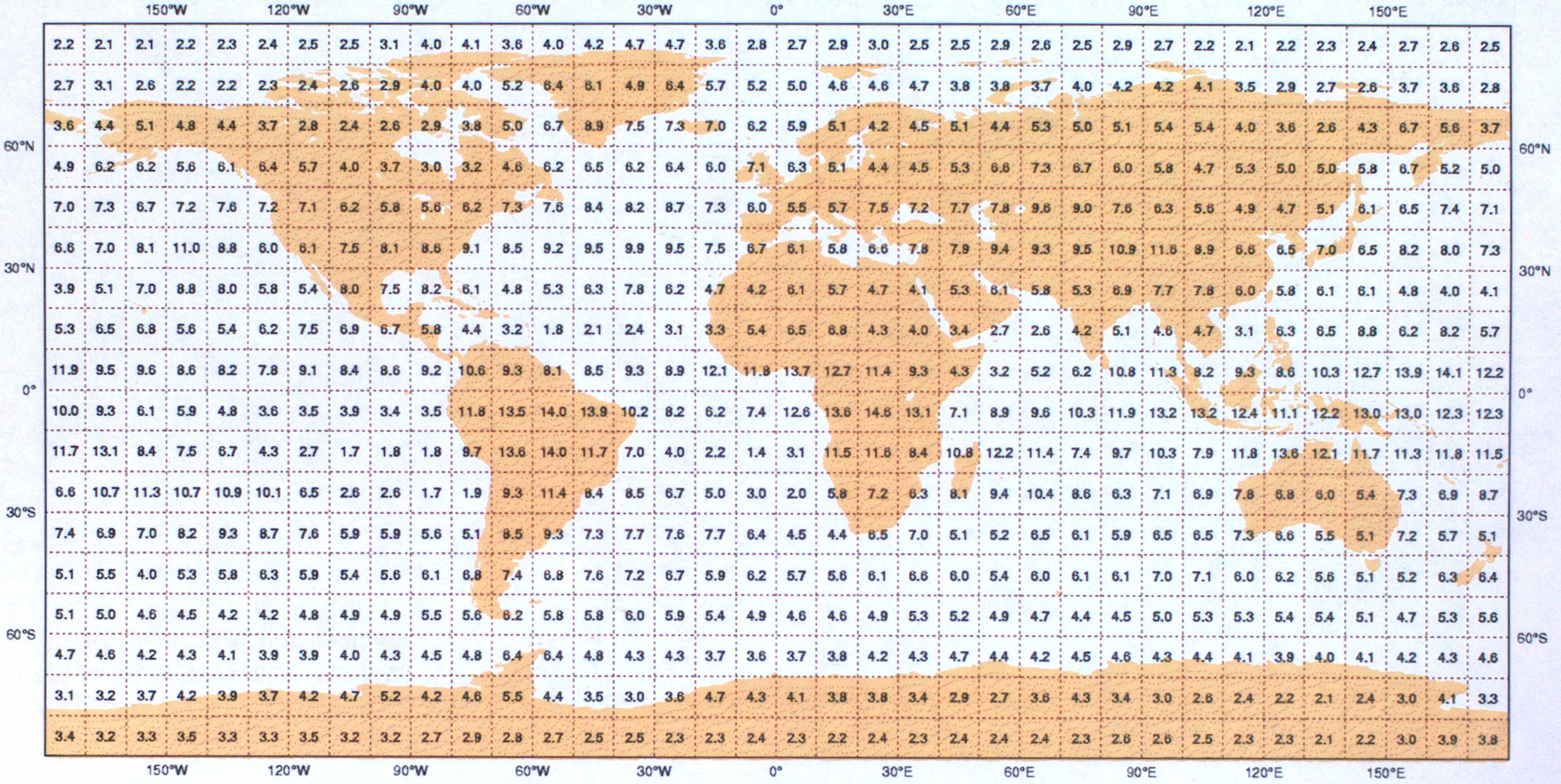
1.1	1.0	.9	.8	.8	.9	1.0	1.2	1.6	2.2	2.1	1.9	2.1	2.4	2.6	2.7	2.1	1.5	1.4	1.6	1.7	1.4	1.1	1.4	1.3	1.2	1.4	1.2	.9	.9	.9	1.0	1.1	1.4	1.5	1.3
1.5	2.0	1.5	1.0	.9	.9	1.0	1.2	1.6	2.3	2.3	3.4	4.3	4.0	3.1	4.0	3.7	3.4	3.3	3.2	2.9	2.9	2.3	2.3	2.1	2.2	2.3	2.3	2.2	1.7	1.4	1.3	1.3	2.1	2.1	1.5
2.4	2.9	3.2	2.9	2.7	2.2	1.6	1.3	1.7	1.7	2.3	3.4	4.9	6.0	4.9	5.0	4.9	4.4	4.3	3.7	2.6	2.7	3.1	2.8	3.3	3.2	3.3	3.2	3.2	2.3	2.0	1.1	2.2	3.4	3.2	2.3
3.5	4.3	4.4	4.0	4.7	4.9	4.2	3.0	2.7	2.2	2.0	3.1	4.6	5.0	4.8	5.2	4.6	5.4	4.9	3.8	3.1	2.8	3.3	4.2	4.8	4.2	3.9	3.6	2.8	3.0	2.7	2.5	3.2	3.8	3.5	3.6
5.6	5.8	4.9	5.7	6.3	5.8	5.7	4.9	4.5	4.2	4.8	5.7	6.2	6.6	6.4	6.8	5.9	5.1	4.7	4.7	5.9	5.4	5.6	5.6	7.2	6.7	5.7	4.6	3.6	3.0	2.9	3.3	4.2	4.8	6.2	5.9
5.6	5.6	6.6	9.4	7.6	5.1	4.9	6.1	6.9	7.6	7.9	7.2	8.4	8.3	8.3	7.9	6.2	5.9	5.6	5.0	5.7	6.7	7.0	8.5	8.3	7.9	8.2	9.2	7.1	5.4	5.9	6.1	5.7	7.4	7.1	6.3
3.0	4.1	6.2	7.8	6.7	4.6	4.5	7.1	7.2	7.7	5.6	4.1	4.6	5.6	6.9	5.2	3.6	3.9	7.1	6.3	4.5	3.4	5.5	5.7	5.2	4.9	5.9	6.6	6.2	5.3	5.9	5.9	5.2	4.1	3.4	3.2
4.4	6.0	6.5	5.1	5.3	6.1	6.5	6.4	6.3	4.5	3.0	2.0	1.0	1.3	1.5	1.8	2.7	5.1	5.9	5.1	2.9	3.4	2.8	2.1	1.9	3.3	4.0	3.4	3.7	2.4	5.6	5.8	7.9	4.6	5.3	4.0
10.8	9.0	8.7	8.1	7.5	7.0	7.6	7.6	8.0	8.3	9.2	8.1	7.2	7.8	8.6	8.0	10.7	10.1	10.9	10.3	9.7	8.1	3.2	2.4	4.4	5.7	10.3	10.3	7.4	8.3	8.1	9.3	11.6	12.3	12.4	11.0
9.2	8.6	5.2	5.4	4.2	2.8	2.8	3.3	3.3	4.1	10.4	11.6	11.9	12.0	9.7	7.2	5.1	6.0	10.5	11.5	12.1	11.3	6.2	8.1	9.3	9.8	11.7	12.6	11.9	11.0	10.4	11.3	11.8	11.6	11.2	11.0
10.0	11.9	7.7	7.0	6.2	4.5	2.1	1.2	1.1	1.1	8.8	11.6	11.8	10.2	6.7	3.2	1.5	.7	2.3	10.4	10.1	7.3	9.5	10.7	10.3	6.4	8.7	9.4	6.3	10.9	12.3	11.3	10.9	10.2	10.6	10.3
6.5	10.2	11.3	10.4	10.4	9.9	6.5	2.3	2.4	1.4	1.3	8.1	9.8	7.8	8.2	6.7	4.8	2.2	1.3	6.3	7.4	5.8	7.7	8.6	9.5	7.9	5.4	6.5	6.5	8.5	8.0	6.5	4.8	6.7	6.6	8.5
6.9	7.4	7.5	7.6	9.2	8.4	7.2	5.3	5.5	5.3	4.4	8.1	8.9	6.6	7.1	7.1	7.5	5.9	3.8	3.9	6.3	6.4	4.5	4.9	6.3	5.7	5.2	6.1	6.0	7.0	6.5	5.3	5.3	6.6	5.2	4.6
4.4	5.2	5.2	5.2	5.2	5.6	5.3	4.6	4.7	5.2	5.9	6.4	6.2	6.7	6.2	5.9	5.2	5.7	5.2	4.9	5.2	5.6	5.1	4.8	5.3	5.4	5.5	6.2	6.2	5.5	5.6	5.0	4.6	4.8	5.7	5.6
4.5	4.6	4.2	4.0	3.7	3.8	4.1	4.0	3.9	4.4	4.5	4.8	4.5	4.7	4.7	4.6	4.2	3.7	3.5	3.6	3.8	4.0	4.1	3.9	3.7	3.4	3.7	4.0	4.2	4.4	4.6	4.6	4.2	3.9	4.5	4.8
3.5	3.3	3.0	3.1	3.2	2.9	2.9	2.9	3.1	3.2	3.4	4.3	4.3	3.2	3.0	2.9	2.5	2.6	2.6	2.7	3.1	3.2	3.7	3.5	3.3	3.4	3.5	3.4	3.5	3.2	3.1	3.0	3.0	2.9	2.9	3.2
1.8	1.8	2.3	2.5	2.4	2.4	2.8	3.0	3.3	2.7	2.9	3.3	2.6	2.2	2.2	2.6	2.8	2.5	2.3	2.0	2.0	1.8	1.4	1.2	2.2	2.6	2.1	1.3	1.2	1.6	.9	1.6	2.0	2.0	2.1	2.0
1.4	1.3	1.4	1.5	1.4	1.5	1.7	1.5	1.5	1.3	1.4	1.7	1.8	1.5	1.4	1.4	1.1	1.2	1.0	.6	.7	.7	.6	.6	.6	.6	.7	.7	.8	.6	1.5	1.8	2.0	2.1	2.5	2.2

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



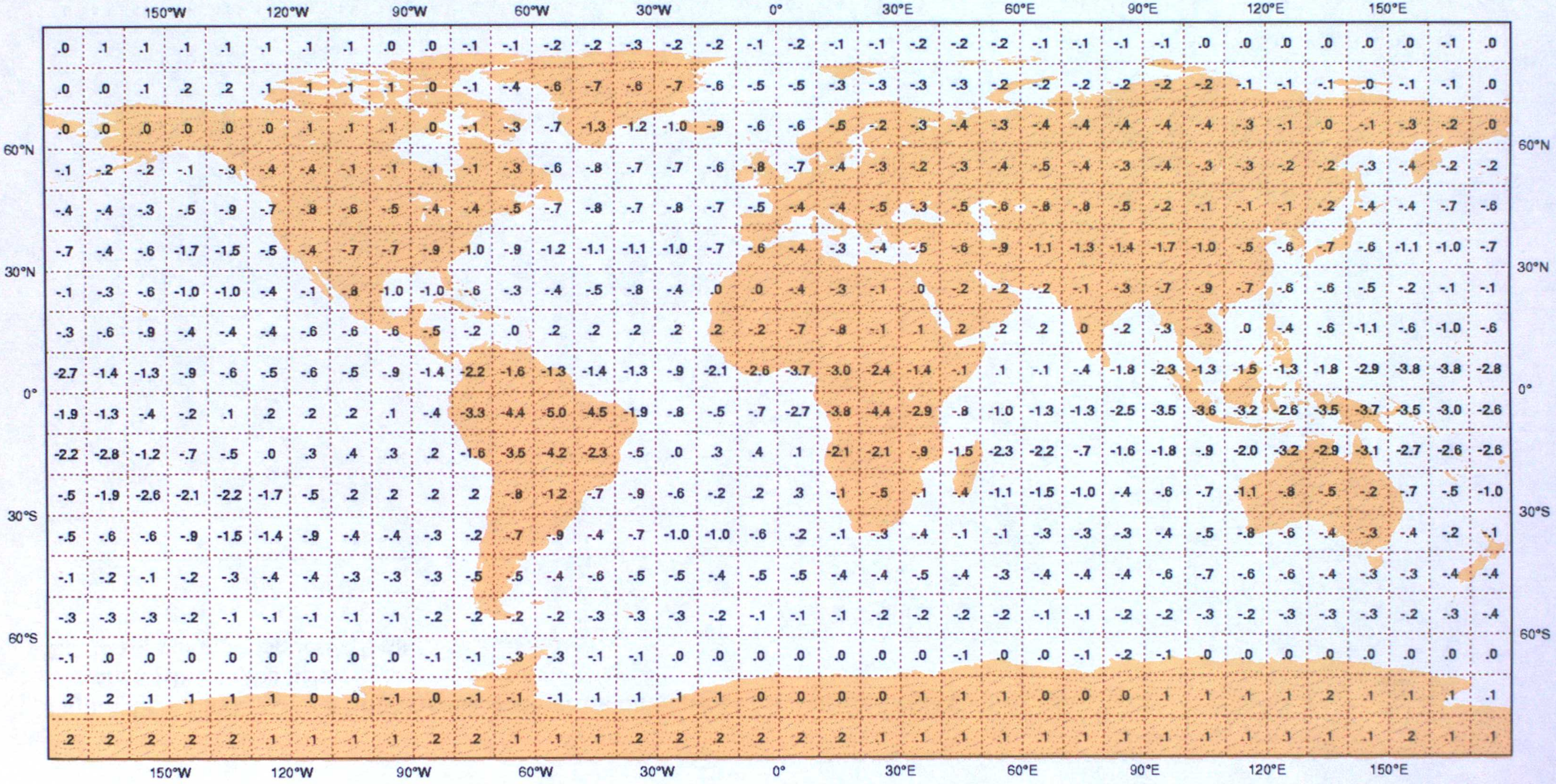
-3.4	-3.3	-3.3	-3.3	-3.5	-3.6	-3.6	-3.9	-4.0	-4.1	-3.5	-3.8	-3.8	-3.6	-3.3	-3.7	-3.8	-3.4	-3.7	-3.5	-3.5	-3.6	-3.8	-4.2	-4.0	-4.0	-4.0	-3.9	-3.5	-3.5	-3.6	-3.5	-3.4	-3.4	-3.4	-3.5
-2.7	-2.9	-2.7	-2.5	-2.6	-2.7	-2.8	-3.6	-3.8	-3.5	-3.1	-4.4	-5.1	-5.5	-4.5	-4.0	-4.5	-3.9	-4.3	-3.9	-4.0	-4.4	-3.9	-3.4	-3.2	-3.9	-4.6	-4.8	-3.8	-2.9	-2.9	-3.2	-2.8	-3.0	-3.2	-2.8
-2.3	-2.5	-3.6	-3.5	-3.2	-2.7	-2.4	-2.7	-2.7	-2.5	-2.9	-3.7	-5.2	-7.4	-6.0	-5.2	-4.3	-3.8	-4.1	-3.4	-2.3	-2.9	-3.4	-3.3	-4.0	-4.1	-4.4	-4.3	-4.3	-3.0	-2.2	-1.6	-2.7	-4.4	-3.8	-2.3
-3.5	-4.1	-4.0	-3.0	-4.1	-5.0	-4.1	-2.7	-2.6	-2.3	-2.7	-3.4	-5.0	-5.1	-4.2	-4.2	-3.1	-4.0	-4.0	-3.0	-2.8	-3.1	-3.8	-4.6	-4.8	-3.6	-2.9	-3.3	-3.0	-3.4	-2.9	-3.5	-4.2	-5.2	-3.7	-3.9
-3.9	-3.8	-3.5	-4.1	-5.1	-4.1	-5.4	-4.2	-3.6	-3.6	-3.9	-4.3	-5.1	-5.3	-5.0	-5.4	-4.1	-3.2	-3.0	-3.3	-4.3	-3.9	-5.0	-4.6	-5.4	-4.8	-2.5	-.5	.3	-.9	-1.2	-2.6	-3.7	-4.0	-5.1	-4.5
-3.3	-3.0	-4.0	-8.0	-5.9	-2.3	-2.6	-3.6	-4.3	-4.6	-5.0	-4.6	-5.6	-5.0	-5.7	-5.5	-3.8	-3.6	-3.3	-2.7	-2.8	-3.7	-3.9	-5.0	-6.6	-7.5	-7.2	-8.9	-5.8	-2.6	-3.6	-4.4	-3.7	-5.2	-4.6	-3.8
-.5	-1.3	-2.5	-4.0	-3.6	-1.5	-1.0	-3.3	-4.5	-4.0	-1.9	-.8	-1.3	-1.9	-2.8	-1.7	-.8	-.8	-2.6	-2.5	-1.1	-.9	-1.7	-1.6	-1.7	-1.0	-2.0	-3.9	-3.3	-3.1	-2.7	-2.2	-1.5	-.7	-.3	-.3
-1.2	-2.2	-2.4	-1.5	-1.4	-1.5	-2.3	-2.2	-2.4	-1.1	-.3	.6	.6	.7	.5	.7	.3	-.8	-1.9	-3.6	-1.9	.1	.9	.8	.5	-.2	-.7	-.8	-1.1	.3	-.8	-1.3	-2.5	-1.6	-2.2	-1.4
-6.9	-3.7	-3.8	-2.9	-1.9	-1.5	-2.3	-2.2	-2.4	-3.6	-6.1	-4.2	-3.3	-3.4	-3.6	-2.6	-5.5	-6.8	-9.4	-8.7	-6.2	-2.4	.3	-.1	-.8	-1.4	-5.0	-6.3	-3.5	-4.5	-3.2	-4.7	-7.9	-10.2	-9.5	-7.2
-4.6	-3.3	-1.3	-.9	-.2	.5	.3	.1	.1	-.3	-8.9	-12.2	-13.3	-12.2	-5.9	-2.3	-1.1	-1.7	-6.6	-9.7	-11.6	-7.4	-1.5	-2.5	-3.7	-4.1	-6.9	-9.2	-9.5	-7.9	-6.3	-9.6	-10.2	-8.8	-7.1	-6.5
-5.3	-6.6	-3.0	-2.1	-1.3	-.2	.5	.8	.8	.6	-4.1	-9.2	-11.1	-7.5	-1.5	.0	.7	.9	.1	-6.1	-6.0	-2.4	-3.8	-5.6	-5.5	-2.0	-3.7	-4.4	-2.1	-5.1	-8.4	-7.9	-8.2	-6.6	-6.3	-6.4
-2.2	-5.1	-7.6	-7.4	-7.0	-5.3	-1.7	.5	.5	.6	.6	-2.7	-3.0	-2.4	-2.7	-2.1	-.6	.5	.7	-1.0	-2.9	-1.1	-2.1	-3.6	-4.4	-3.3	-1.5	-2.3	-2.2	-3.9	-4.0	-3.0	-2.4	-3.2	-2.5	-3.7
-2.7	-3.1	-2.9	-4.2	-5.9	-5.4	-3.5	-1.7	-1.9	-1.5	-.9	-3.5	-3.9	-2.0	-3.0	-3.9	-4.0	-2.4	-.8	-.5	-2.1	-2.0	-.9	-1.0	-1.5	-1.6	-1.6	-1.9	-2.4	-3.6	-3.2	-1.9	-2.3	-2.6	-1.7	-1.1
-1.5	-2.0	-.9	-1.5	-2.1	-2.5	-2.6	-2.2	-2.1	-2.3	-3.2	-3.5	-3.1	-3.6	-3.1	-3.0	-2.9	-2.9	-3.0	-2.6	-2.8	-2.9	-2.7	-2.4	-2.8	-3.1	-3.1	-4.1	-4.2	-3.2	-3.3	-2.5	-1.9	-2.3	-2.9	-2.8
-3.2	-3.2	-2.6	-2.5	-2.1	-2.1	-2.6	-2.8	-2.9	-3.3	-3.5	-3.7	-3.4	-3.3	-3.9	-3.9	-3.4	-3.0	-2.9	-3.0	-3.2	-3.6	-3.5	-3.3	-3.1	-2.9	-3.0	-3.6	-3.6	-3.0	-3.3	-3.5	-3.2	-2.8	-3.3	-3.7
-4.3	-4.2	-3.7	-3.6	-3.7	-3.6	-3.4	-3.5	-3.8	-3.8	-3.8	-4.9	-4.9	-3.6	-3.6	-3.6	-3.5	-3.5	-3.3	-3.1	-3.6	-4.0	-3.9	-3.7	-3.8	-4.5	-4.2	-3.5	-3.1	-2.8	-3.0	-3.1	-3.3	-3.6	-4.1	-4.5
-3.8	-3.7	-4.1	-4.2	-3.2	-2.9	-3.5	-3.7	-4.1	-3.1	-3.6	-3.9	-3.9	-3.0	-2.7	-2.4	-2.4	-2.3	-2.6	-2.6	-2.5	-2.1	-2.1	-1.6	-1.9	-3.1	-3.0	-2.0	-1.4	-1.4	-1.5	-1.2	-1.5	-1.3	-2.9	-4.8
-2.6	-2.6	-2.5	-1.6	-1.4	-1.5	-1.6	-1.5	-.8	-.3	-1.0	-1.9	-1.8	-1.3	-.9	-.4	-.4	-.4	-.2	-.4	-.5	-.9	-1.1	-.8	-.7	-.6	-.6	-.7	-1.0	-1.2	-1.3	-1.1	-1.5	-.7	-2.4	-3.1

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



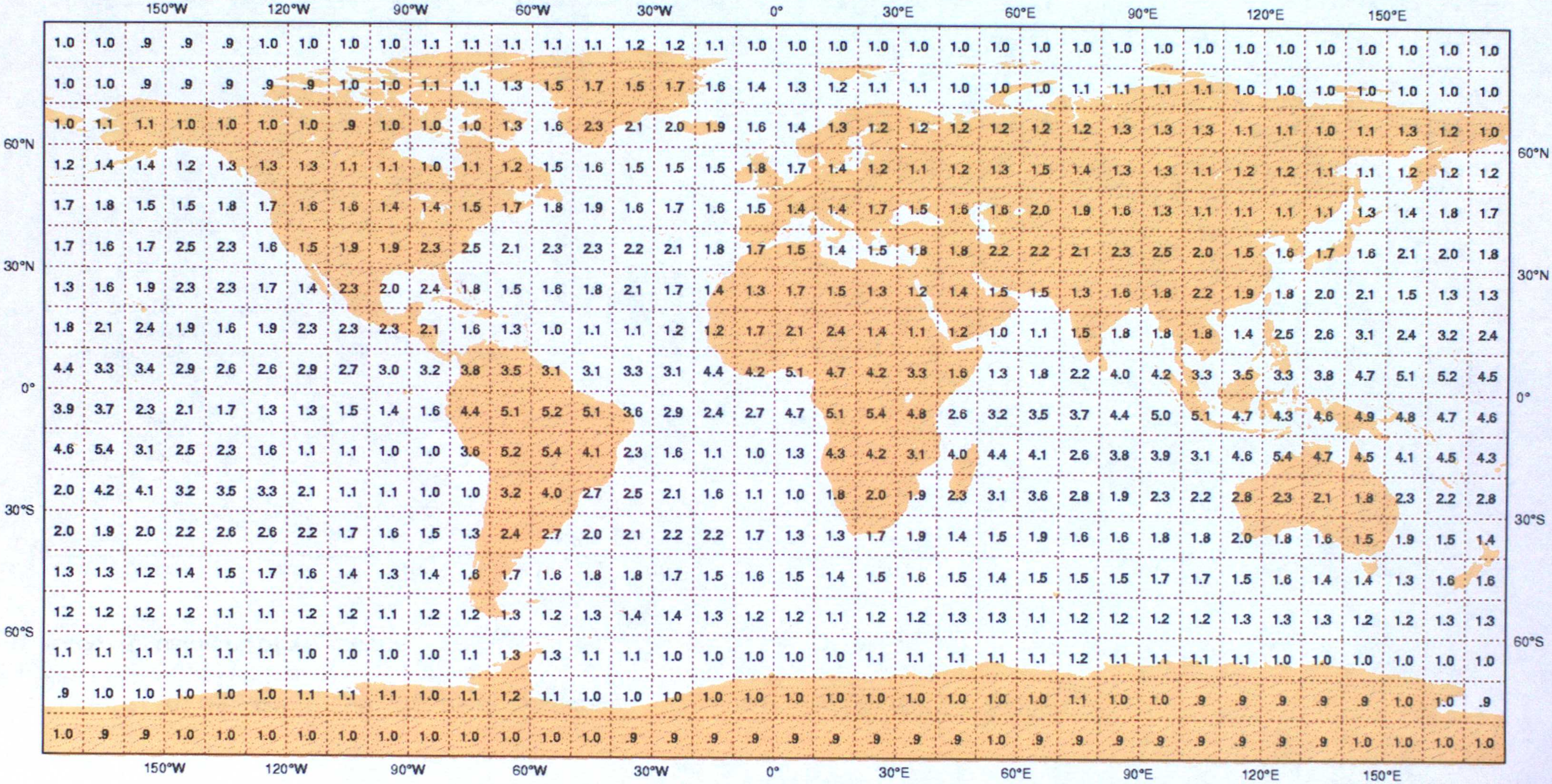
2.2	2.1	2.1	2.2	2.3	2.4	2.5	2.5	3.1	4.0	4.1	3.6	4.0	4.2	4.7	4.7	3.6	2.8	2.7	2.9	3.0	2.5	2.5	2.9	2.6	2.5	2.9	2.7	2.2	2.1	2.2	2.3	2.4	2.7	2.6	2.5
2.7	3.1	2.6	2.2	2.2	2.3	2.4	2.6	2.9	4.0	4.0	5.2	6.4	6.1	4.9	6.4	5.7	5.2	5.0	4.6	4.6	4.7	3.8	3.8	3.7	4.0	4.2	4.2	4.1	3.5	2.9	2.7	2.6	3.7	3.6	2.8
3.6	4.4	5.1	4.8	4.4	3.7	2.8	2.4	2.6	2.9	3.8	5.0	6.7	8.9	7.5	7.3	7.0	6.2	5.9	5.1	4.2	4.5	5.1	4.4	5.3	5.0	5.1	5.4	5.4	4.0	3.6	2.6	4.3	6.7	5.6	3.7
4.9	6.2	6.2	5.6	6.1	6.4	5.7	4.0	3.7	3.0	3.2	4.6	6.2	6.5	6.2	6.4	6.0	7.1	6.3	5.1	4.4	4.5	5.3	6.6	7.3	6.7	6.0	5.8	4.7	5.3	5.0	5.0	5.8	6.7	5.2	5.0
7.0	7.3	6.7	7.2	7.6	7.2	7.1	6.2	5.8	5.6	6.2	7.3	7.6	8.4	8.2	8.7	7.3	6.0	5.5	5.7	7.5	7.2	7.7	7.8	9.6	9.0	7.6	6.3	5.6	4.9	4.7	5.1	6.1	6.5	7.4	7.1
6.6	7.0	8.1	11.0	8.8	6.0	6.1	7.5	8.1	8.6	9.1	8.5	9.2	9.5	9.9	9.5	7.5	6.7	6.1	5.8	6.6	7.8	7.9	9.4	9.3	9.5	10.9	11.6	8.9	6.6	6.5	7.0	6.5	8.2	8.0	7.3
3.9	5.1	7.0	8.8	8.0	5.8	5.4	8.0	7.5	8.2	6.1	4.8	5.3	6.3	7.8	6.2	4.7	4.2	6.1	5.7	4.7	4.1	5.3	6.1	5.8	5.3	6.9	7.7	7.8	6.0	5.8	6.1	6.1	4.8	4.0	4.1
5.3	6.5	6.8	5.6	5.4	6.2	7.5	6.9	6.7	5.8	4.4	3.2	1.8	2.1	2.4	3.1	3.3	5.4	6.5	6.8	4.3	4.0	3.4	2.7	2.6	4.2	5.1	4.6	4.7	3.1	6.3	6.5	8.8	6.2	8.2	5.7
11.9	9.5	9.6	8.6	8.2	7.8	9.1	8.4	8.6	9.2	10.6	9.3	8.1	8.5	9.3	8.9	12.1	11.8	13.7	12.7	11.4	9.3	4.3	3.2	5.2	6.2	10.8	11.3	8.2	9.3	8.6	10.3	12.7	13.9	14.1	12.2
10.0	9.3	6.1	5.9	4.8	3.6	3.5	3.9	3.4	3.5	11.8	13.5	14.0	13.9	10.2	8.2	6.2	7.4	12.6	13.6	14.6	13.1	7.1	8.9	9.6	10.3	11.9	13.2	13.2	12.4	11.1	12.2	13.0	13.0	12.3	12.3
11.7	13.1	8.4	7.5	6.7	4.3	2.7	1.7	1.8	1.8	9.7	13.6	14.0	11.7	7.0	4.0	2.2	1.4	3.1	11.5	11.6	8.4	10.8	12.2	11.4	7.4	9.7	10.3	7.9	11.8	13.6	12.1	11.7	11.3	11.8	11.5
6.6	10.7	11.3	10.7	10.9	10.1	6.5	2.6	2.6	1.7	1.9	9.3	11.4	8.4	8.5	6.7	5.0	3.0	2.0	5.8	7.2	6.3	8.1	9.4	10.4	8.6	6.3	7.1	6.9	7.8	6.8	6.0	5.4	7.3	6.9	8.7
7.4	6.9	7.0	8.2	9.3	8.7	7.6	5.9	5.9	5.6	5.1	8.5	9.3	7.3	7.7	7.6	7.7	6.4	4.5	4.4	6.5	7.0	5.1	5.2	6.5	6.1	5.9	6.5	6.5	7.3	6.6	5.5	5.1	7.2	5.7	5.1
5.1	5.5	4.0	5.3	5.8	6.3	5.9	5.4	5.6	6.1	6.8	7.4	6.8	7.6	7.2	6.7	5.9	6.2	5.7	5.6	6.1	6.6	6.0	5.4	6.0	6.1	6.1	7.0	7.1	6.0	6.2	5.6	5.1	5.2	6.3	6.4
5.1	5.0	4.6	4.5	4.2	4.2	4.8	4.9	4.9	5.5	5.6	6.2	5.8	5.8	6.0	5.9	5.4	4.9	4.6	4.6	4.9	5.3	5.2	4.9	4.7	4.4	4.5	5.0	5.3	5.3	5.4	5.4	5.1	4.7	5.3	5.6
4.7	4.6	4.2	4.3	4.1	3.9	3.9	4.0	4.3	4.5	4.8	6.4	6.4	4.8	4.3	4.3	3.7	3.6	3.7	3.8	4.2	4.3	4.7	4.4	4.2	4.5	4.6	4.3	4.4	4.1	3.9	4.0	4.1	4.2	4.3	4.6
3.1	3.2	3.7	4.2	3.9	3.7	4.2	4.7	5.2	4.2	4.6	5.5	4.4	3.5	3.0	3.6	4.7	4.3	4.1	3.8	3.8	3.4	2.9	2.7	3.6	4.3	3.4	3.0	2.6	2.4	2.2	2.1	2.4	3.0	4.1	3.3
3.4	3.2	3.3	3.5	3.3	3.3	3.5	3.2	3.2	2.7	2.9	2.8	2.7	2.5	2.5	2.3	2.3	2.4	2.3	2.2	2.4	2.3	2.4	2.4	2.4	2.3	2.6	2.6	2.5	2.3	2.3	2.1	2.2	3.0	3.9	3.8

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



.0	.1	.1	.1	.1	.1	.1	.1	.0	.0	-.1	-.1	-.2	-.2	-.3	-.2	-.2	-.1	-.2	-.1	-.1	-.2	-.2	-.2	-.1	-.1	-.1	-.1	.0	.0	.0	.0	.0	.0	-.1	.0
.0	.0	.1	.2	.2	.1	.1	.1	.1	.0	-.1	-.4	-.6	-.7	-.6	-.7	-.6	-.5	-.5	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	.0	-.1	-.1	.0
.0	.0	.0	.0	.0	.0	.1	.1	.1	.0	-.1	-.3	-.7	-1.3	-1.2	-1.0	-.9	-.6	-.6	-.5	-.2	-.3	-.4	-.3	-.4	-.4	-.4	-.4	-.4	-.3	-.1	.0	-.1	-.3	-.2	.0
-.1	-.2	-.2	-.1	-.3	-.4	-.4	-.1	-.1	-.1	-.1	-.3	-.6	-.8	-.7	-.7	-.6	-.8	-.7	-.4	-.3	-.2	-.3	-.4	-.5	-.4	-.3	-.4	-.3	-.3	-.2	-.2	-.3	-.4	-.2	-.2
-.4	-.4	-.3	-.5	-.9	-.7	-.8	-.6	-.5	-.4	-.4	-.5	-.7	-.8	-.7	-.8	-.7	-.5	-.4	-.4	-.5	-.3	-.5	-.6	-.8	-.8	-.5	-.2	-.1	-.1	-.1	-.2	-.4	-.4	-.7	-.6
-.7	-.4	-.6	-1.7	-1.5	-.5	-.4	-.7	-.7	-.9	-1.0	-.9	-1.2	-1.1	-1.1	-1.0	-.7	-.6	-.4	-.3	-.4	-.5	-.6	-.9	-1.1	-1.3	-1.4	-1.7	-1.0	-.5	-.6	-.7	-.6	-1.1	-1.0	-.7
-.1	-.3	-.6	-1.0	-1.0	-.4	-.1	-.8	-1.0	-1.0	-.6	-.3	-.4	-.5	-.8	-.4	.0	.0	-.4	-.3	-.1	.0	-.2	-.2	-.2	-.1	-.3	-.7	-.9	-.7	-.6	-.6	-.5	-.2	-.1	-.1
-.3	-.6	-.9	-.4	-.4	-.4	-.6	-.6	-.6	-.5	-.2	.0	.2	.2	.2	.2	.2	-.2	-.7	-.8	-.1	.1	.2	.2	.2	.0	-.2	-.3	-.3	.0	-.4	-.6	-1.1	-.6	-1.0	-.6
-2.7	-1.4	-1.3	-.9	-.6	-.5	-.6	-.5	-.9	-1.4	-2.2	-1.6	-1.3	-1.4	-1.3	-.9	-2.1	-2.6	-3.7	-3.0	-2.4	-1.4	-.1	.1	-.1	-.4	-1.8	-2.3	-1.3	-1.5	-1.3	-1.8	-2.9	-3.8	-3.8	-2.8
-1.9	-1.3	-.4	-.2	.1	.2	.2	.2	.1	-.4	-3.3	-4.4	-5.0	-4.5	-1.9	-.8	-.5	-.7	-2.7	-3.8	-4.4	-2.9	-.8	-1.0	-1.3	-1.3	-2.5	-3.5	-3.6	-3.2	-2.6	-3.5	-3.7	-3.5	-3.0	-2.6
-2.2	-2.8	-1.2	-.7	-.5	.0	.3	.4	.3	.2	-1.6	-3.5	-4.2	-2.3	-.5	.0	.3	.4	.1	-2.1	-2.1	-.9	-1.5	-2.3	-2.2	-.7	-1.6	-1.8	-.9	-2.0	-3.2	-2.9	-3.1	-2.7	-2.6	-2.6
-.5	-1.9	-2.6	-2.1	-2.2	-1.7	-.5	.2	.2	.2	.2	-.8	-1.2	-.7	-.9	-.6	-.2	.2	.3	-.1	-.5	-.1	-.4	-1.1	-1.5	-1.0	-.4	-.6	-.7	-1.1	-.8	-.5	-.2	-.7	-.5	-1.0
-.5	-.6	-.6	-.9	-1.5	-1.4	-.9	-.4	-.4	-.3	-.2	-.7	-.9	-.4	-.7	-1.0	-1.0	-.6	-.2	-.1	-.3	-.4	-.1	-.1	-.3	-.3	-.3	-.4	-.5	-.8	-.6	-.4	-.3	-.4	-.2	-.1
-.1	-.2	-.1	-.2	-.3	-.4	-.4	-.3	-.3	-.3	-.5	-.5	-.4	-.6	-.5	-.5	-.4	-.5	-.5	-.4	-.4	-.5	-.4	-.3	-.4	-.4	-.4	-.6	-.7	-.6	-.6	-.4	-.3	-.3	-.4	-.4
-.3	-.3	-.3	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.2	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.1	-.1	-.2	-.2	-.3	-.2	-.3	-.3	-.3	-.2	-.3	-.4
-.1	.0	.0	.0	.0	.0	.0	.0	.0	-.1	-.1	-.3	-.3	-.1	-.1	.0	.0	.0	.0	.0	.0	.0	-.1	.0	.0	-.1	-.2	-.1	.0	.0	.0	.0	.0	.0	.0	.0
.2	.2	.1	.1	.1	.1	.0	.0	-.1	.0	-.1	-.1	-.1	.1	.1	.1	.1	.0	.0	.0	.0	.1	.1	.1	.0	.0	.0	.1	.1	.1	.1	.2	.1	.1	.1	.1
.2	.2	.2	.2	.2	.1	.1	.1	.1	.2	.2	.1	.1	.1	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



1.0	1.0	.9	.9	.9	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1.0	1.0	.9	.9	.9	.9	.9	1.0	1.0	1.1	1.1	1.3	1.5	1.7	1.5	1.7	1.6	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1.0	1.1	1.1	1.0	1.0	1.0	1.0	.9	1.0	1.0	1.0	1.3	1.6	2.3	2.1	2.0	1.9	1.6	1.4	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.1	1.1	1.0	1.1	1.3	1.2	1.0
1.2	1.4	1.4	1.2	1.3	1.3	1.3	1.1	1.1	1.0	1.1	1.2	1.5	1.6	1.5	1.5	1.5	1.8	1.7	1.4	1.2	1.1	1.2	1.3	1.5	1.4	1.3	1.3	1.1	1.2	1.2	1.1	1.1	1.2	1.2	1.2
1.7	1.8	1.5	1.5	1.8	1.7	1.6	1.6	1.4	1.4	1.5	1.7	1.8	1.9	1.6	1.7	1.6	1.5	1.4	1.4	1.7	1.5	1.6	1.6	2.0	1.9	1.6	1.3	1.1	1.1	1.1	1.1	1.3	1.4	1.8	1.7
1.7	1.6	1.7	2.5	2.3	1.6	1.5	1.9	1.9	2.3	2.5	2.1	2.3	2.3	2.2	2.1	1.8	1.7	1.5	1.4	1.5	1.8	1.8	2.2	2.2	2.1	2.3	2.5	2.0	1.5	1.6	1.7	1.6	2.1	2.0	1.8
1.3	1.6	1.9	2.3	2.3	1.7	1.4	2.3	2.0	2.4	1.8	1.5	1.6	1.8	2.1	1.7	1.4	1.3	1.7	1.5	1.3	1.2	1.4	1.5	1.5	1.3	1.6	1.8	2.2	1.9	1.8	2.0	2.1	1.5	1.3	1.3
1.8	2.1	2.4	1.9	1.6	1.9	2.3	2.3	2.3	2.1	1.6	1.3	1.0	1.1	1.1	1.2	1.2	1.7	2.1	2.4	1.4	1.1	1.2	1.0	1.1	1.5	1.8	1.8	1.8	1.4	2.5	2.6	3.1	2.4	3.2	2.4
4.4	3.3	3.4	2.9	2.6	2.6	2.9	2.7	3.0	3.2	3.8	3.5	3.1	3.1	3.3	3.1	4.4	4.2	5.1	4.7	4.2	3.3	1.6	1.3	1.8	2.2	4.0	4.2	3.3	3.5	3.3	3.8	4.7	5.1	5.2	4.5
3.9	3.7	2.3	2.1	1.7	1.3	1.3	1.5	1.4	1.6	4.4	5.1	5.2	5.1	3.6	2.9	2.4	2.7	4.7	5.1	5.4	4.8	2.6	3.2	3.5	3.7	4.4	5.0	5.1	4.7	4.3	4.6	4.9	4.8	4.7	4.6
4.6	5.4	3.1	2.5	2.3	1.6	1.1	1.1	1.0	1.0	3.6	5.2	5.4	4.1	2.3	1.6	1.1	1.0	1.3	4.3	4.2	3.1	4.0	4.4	4.1	2.6	3.8	3.9	3.1	4.6	5.4	4.7	4.5	4.1	4.5	4.3
2.0	4.2	4.1	3.2	3.5	3.3	2.1	1.1	1.1	1.0	1.0	3.2	4.0	2.7	2.5	2.1	1.6	1.1	1.0	1.8	2.0	1.9	2.3	3.1	3.6	2.8	1.9	2.3	2.2	2.8	2.3	2.1	1.8	2.3	2.2	2.8
2.0	1.9	2.0	2.2	2.6	2.6	2.2	1.7	1.6	1.5	1.3	2.4	2.7	2.0	2.1	2.2	2.2	1.7	1.3	1.3	1.7	1.9	1.4	1.5	1.9	1.6	1.6	1.8	1.8	2.0	1.8	1.6	1.5	1.9	1.5	1.4
1.3	1.3	1.2	1.4	1.5	1.7	1.6	1.4	1.3	1.4	1.6	1.7	1.6	1.8	1.8	1.7	1.5	1.6	1.5	1.4	1.5	1.6	1.5	1.4	1.5	1.5	1.5	1.7	1.7	1.5	1.6	1.4	1.4	1.3	1.6	1.6
1.2	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.1	1.2	1.2	1.3	1.2	1.3	1.4	1.4	1.3	1.2	1.2	1.1	1.2	1.2	1.3	1.3	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.2	1.2	1.3	1.3
1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.3	1.3	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0
.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.0	1.1	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	.9	.9	.9	.9	.9	1.0	1.0	.9
1.0	.9	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.9	.9	.9	.9	.9	.9	.9	.9	.9	1.0	.9	.9	.9	.9	.9	.9	.9	.9	1.0	1.0	1.0	1.0

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations

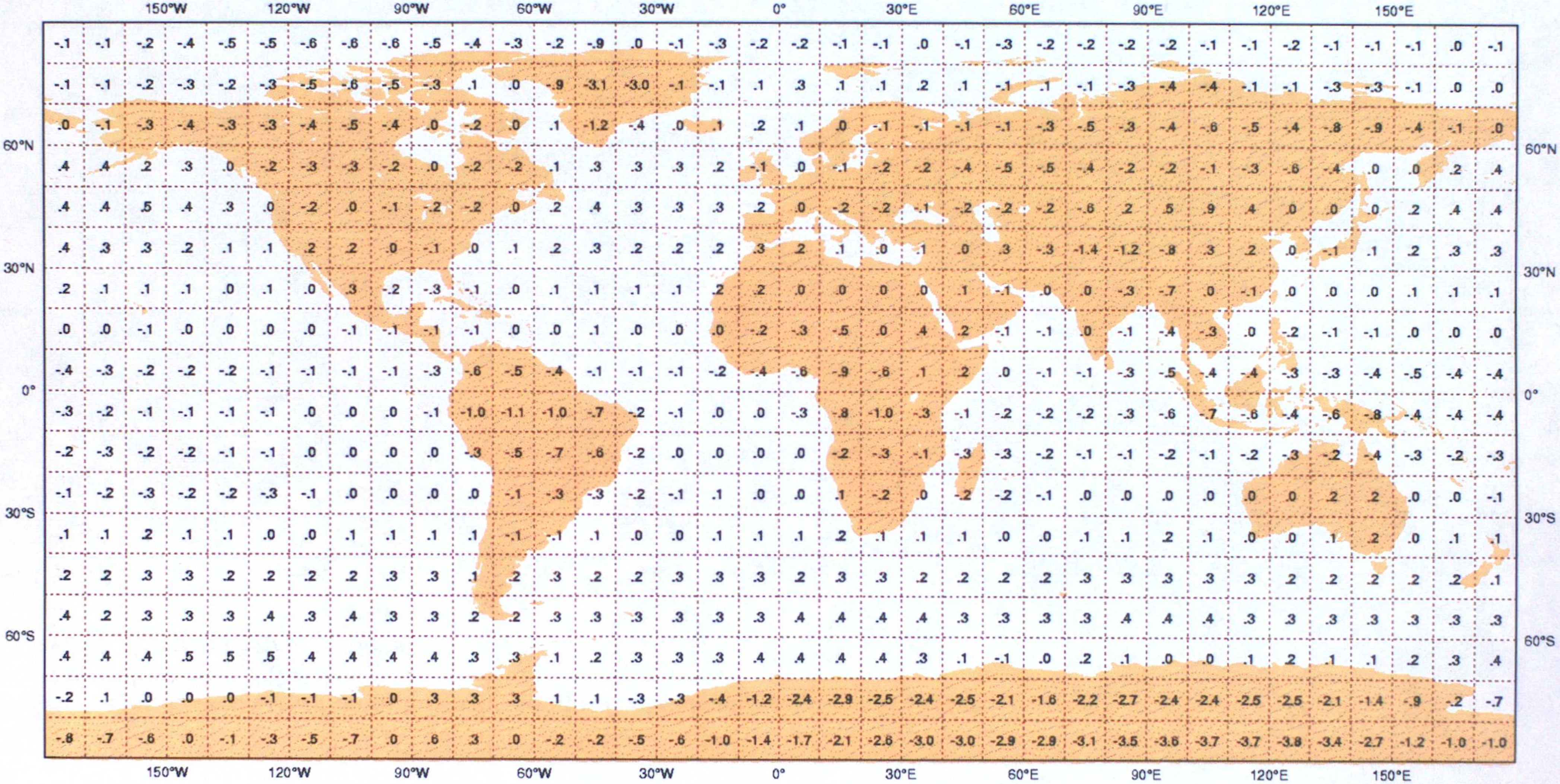
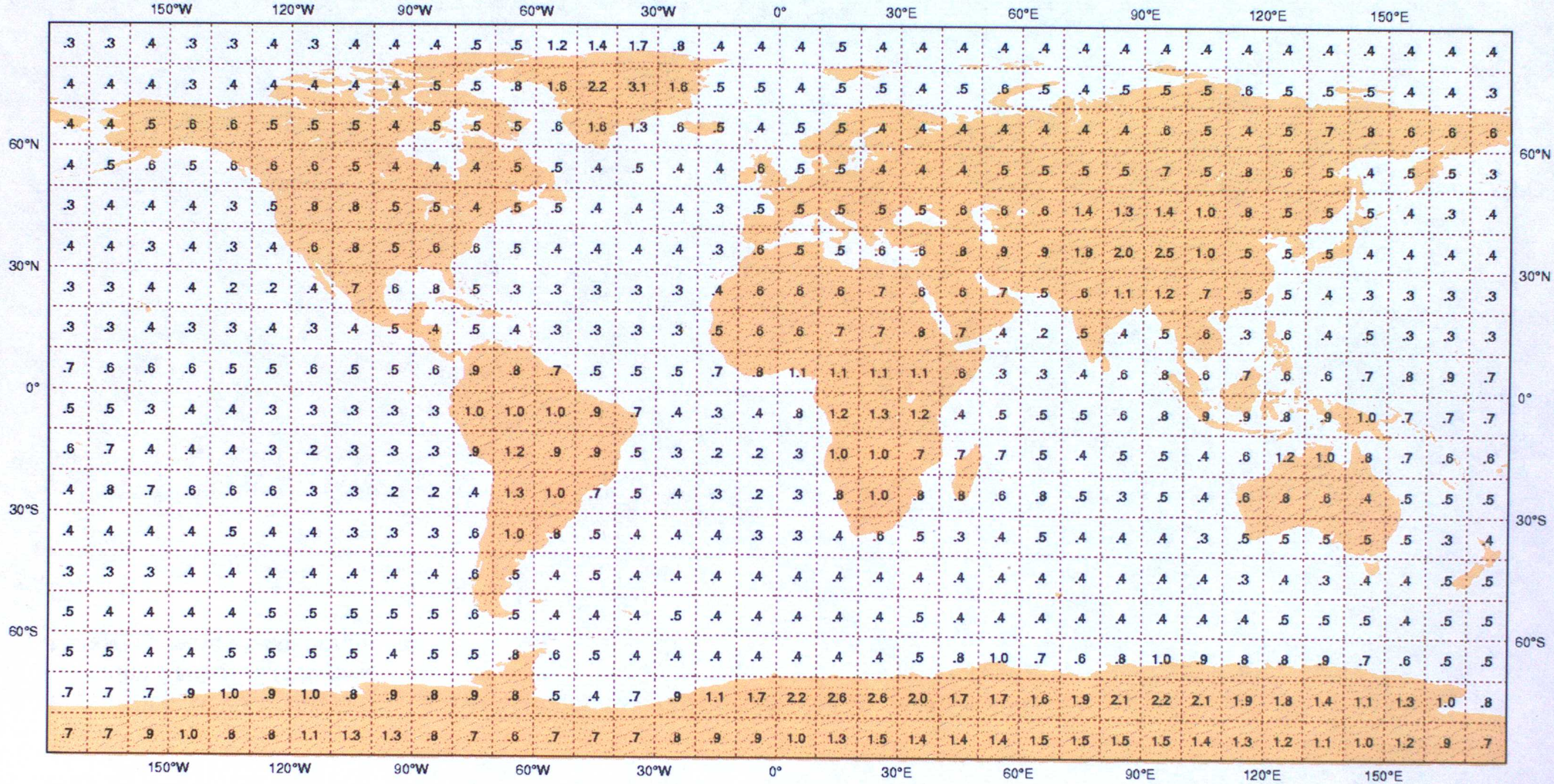

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-.1 -.1 -.2 -.4 -.5 -.5 -.6 -.6 -.6 -.5 -.4 -.3 -.2 -.9 .0 -.1 -.3 -.2 -.2 -.1 -.1 .0 -.1 -.3 -.2 -.2 -.2 -.2 -.1 -.1 -.2 -.1 -.1 -.1 .0 -.1
-.1 -.1 -.2 -.3 -.2 -.3 -.5 -.6 -.5 -.3 .1 .0 -.9 -3.1 -3.0 -.1 -.1 .1 .3 .1 .1 .2 .1 -.1 .1 -.1 -.3 -.4 -.4 -.1 -.1 -.3 -.3 -.1 .0 .0
.0 -.1 -.3 -.4 -.3 -.3 -.4 -.5 -.4 .0 -.2 .0 .1 -1.2 -.4 .0 .1 .2 .1 .0 -.1 -.1 -.1 -.1 -.3 -.5 -.3 -.4 -.6 -.5 -.4 -.8 -.9 -.4 -.1 .0
.4 .4 .2 .3 .0 -.2 -.3 -.3 -.2 .0 -.2 -.2 .1 .3 .3 .3 .2 -.1 .0 -.1 -.2 -.2 -.4 -.5 -.5 -.4 -.2 -.2 -.1 -.3 -.6 -.4 .0 .0 .2 .4
.4 .4 .5 .4 .3 .0 -.2 .0 -.1 -.2 -.2 .0 .2 .4 .3 .3 .3 .2 .0 -.2 -.2 -.1 -.2 -.2 -.2 -.6 .2 .5 .9 .4 .0 .0 .0 .2 .4 .4
.4 .3 .3 .2 .1 .1 .2 .2 .0 -.1 .0 .1 .2 .3 .2 .2 .2 .3 .2 .1 .0 .1 .0 .3 -.3 -1.4 -1.2 -.8 .3 .2 .0 -.1 .1 .2 .3 .3
.2 .1 .1 .1 .0 .1 .0 .3 -.2 -.3 -.1 .0 .1 .1 .1 .1 .2 .2 .0 .0 .0 .0 .1 -.1 .0 .0 -.3 -.7 .0 -.1 .0 .0 .0 .1 .1 .1
.0 .0 -.1 .0 .0 .0 .0 -.1 -.1 -.1 -.1 .0 .0 .1 .0 .0 .0 -.2 -.3 -.5 .0 .4 .2 -.1 -.1 .0 -.1 -.4 -.3 .0 -.2 -.1 -.1 .0 .0 .0
-.4 -.3 -.2 -.2 -.2 -.1 -.1 -.1 -.1 -.3 -.6 -.5 -.4 -.1 -.1 -.1 -.2 -.4 -.6 -.9 -.6 .1 .2 .0 -.1 -.1 -.3 -.5 -.4 -.4 -.3 -.3 -.4 -.5 -.4 -.4
-.3 -.2 -.1 -.1 -.1 -.1 .0 .0 .0 -.1 -1.0 -1.1 -1.0 -.7 -.2 -.1 .0 .0 -.3 -.8 -1.0 -.3 -.1 -.2 -.2 -.2 -.3 -.6 -.7 -.6 -.4 -.6 -.8 -.4 -.4 -.4
-.2 -.3 -.2 -.2 -.1 -.1 .0 .0 .0 .0 -.3 -.5 -.7 -.6 -.2 .0 .0 .0 .0 -.2 -.3 -.1 -.3 -.3 -.2 -.1 -.1 -.2 -.1 -.2 -.3 -.2 -.4 -.3 -.2 -.3
-.1 -.2 -.3 -.2 -.2 -.3 -.1 .0 .0 .0 .0 -.1 -.3 -.3 -.2 -.1 .1 .0 .0 .1 -.2 .0 -.2 -.2 -.1 .0 .0 .0 .0 .0 .0 .2 .2 .0 .0 -.1
.1 .1 .2 .1 .1 .0 .0 .1 .1 .1 .1 -.1 -.1 .1 .0 .0 .1 .1 .1 .2 .1 .1 .1 .0 .0 .1 .1 .2 .1 .0 .0 .1 .2 .0 .1 .1
.2 .2 .3 .3 .2 .2 .2 .2 .3 .3 .1 .2 .3 .2 .2 .3 .3 .3 .2 .3 .3 .2 .2 .2 .2 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .1
.4 .2 .3 .3 .3 .4 .3 .4 .3 .3 .2 .2 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3
.4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .3 .3 .1 .2 .3 .3 .3 .4 .4 .4 .4 .3 .1 -.1 .0 .2 .1 .0 .0 .1 .2 .1 .1 .2 .3 .4
-.2 .1 .0 .0 .0 -.1 -.1 -.1 .0 .3 .3 .3 .1 .1 -.3 -.3 -.4 -1.2 -2.4 -2.9 -2.5 -2.4 -2.5 -2.1 -1.6 -2.2 -2.7 -2.4 -2.4 -2.5 -2.5 -2.1 -1.4 -.9 -.2 -.7
-.8 -.7 -.6 .0 -.1 -.3 -.5 -.7 .0 .6 .3 .0 -.2 -.2 -.5 -.6 -1.0 -1.4 -1.7 -2.1 -2.6 -3.0 -3.0 -2.9 -2.9 -3.1 -3.5 -3.6 -3.7 -3.7 -3.8 -3.4 -2.7 -1.2 -1.0 -1.0

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



.3	.3	.4	.3	.3	.4	.3	.4	.4	.4	.5	.5	1.2	1.4	1.7	.8	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.3	.4	.4	.4	.4	.4	.5	.5	.8	1.6	2.2	3.1	1.6	.5	.5	.4	.5	.5	.4	.5	.6	.5	.4	.5	.5	.5	.6	.5	.5	.5	.4	.4	.3
.4	.4	.5	.6	.6	.5	.5	.5	.4	.5	.5	.5	.6	1.6	1.3	.6	.5	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.6	.5	.4	.5	.7	.8	.6	.6	.6
.4	.5	.6	.5	.6	.6	.6	.5	.4	.4	.4	.5	.5	.4	.5	.4	.4	.6	.5	.5	.4	.4	.4	.5	.5	.5	.5	.7	.5	.8	.6	.5	.4	.5	.5	.3
.3	.4	.4	.4	.3	.5	.8	.8	.5	.5	.4	.5	.5	.4	.4	.4	.3	.5	.5	.5	.5	.5	.6	.6	.6	1.4	1.3	1.4	1.0	.8	.5	.5	.5	.4	.3	.4
.4	.4	.3	.4	.3	.4	.6	.8	.5	.6	.6	.5	.4	.4	.4	.4	.3	.6	.5	.5	.6	.6	.8	.9	.9	1.8	2.0	2.5	1.0	.5	.5	.5	.4	.4	.4	.4
.3	.3	.4	.4	.2	.2	.4	.7	.6	.8	.5	.3	.3	.3	.3	.3	.4	.6	.6	.6	.7	.6	.6	.7	.5	.6	1.1	1.2	.7	.5	.5	.4	.3	.3	.3	.3
.3	.3	.4	.3	.3	.4	.3	.4	.5	.4	.5	.4	.3	.3	.3	.3	.5	.6	.6	.7	.7	.8	.7	.4	.2	.5	.4	.5	.6	.3	.6	.4	.5	.3	.3	.3
.7	.6	.6	.6	.5	.5	.6	.5	.5	.6	.9	.8	.7	.5	.5	.5	.7	.8	1.1	1.1	1.1	1.1	.6	.3	.3	.4	.6	.8	.6	.7	.6	.6	.7	.8	.9	.7
.5	.5	.3	.4	.4	.3	.3	.3	.3	.3	1.0	1.0	1.0	.9	.7	.4	.3	.4	.8	1.2	1.3	1.2	.4	.5	.5	.5	.6	.8	.9	.9	.8	.9	1.0	.7	.7	.7
.6	.7	.4	.4	.4	.3	.2	.3	.3	.3	.9	1.2	.9	.9	.5	.3	.2	.2	.3	1.0	1.0	.7	.7	.7	.5	.4	.5	.5	.4	.6	1.2	1.0	.8	.7	.6	.6
.4	.8	.7	.6	.6	.6	.3	.3	.2	.2	.4	1.3	1.0	.7	.5	.4	.3	.2	.3	.8	1.0	.8	.8	.6	.8	.5	.3	.5	.4	.6	.8	.6	.4	.5	.5	.5
.4	.4	.4	.4	.5	.4	.4	.3	.3	.3	.6	1.0	.8	.5	.4	.4	.4	.3	.3	.4	.6	.5	.3	.4	.5	.4	.4	.4	.3	.5	.5	.5	.5	.5	.3	.4
.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.6	.5	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.3	.4	.4	.5	.5
.5	.4	.4	.4	.4	.5	.5	.5	.5	.5	.6	.5	.4	.4	.4	.5	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.4	.5	.5
.5	.5	.4	.4	.5	.5	.5	.5	.4	.5	.5	.8	.6	.5	.4	.4	.4	.4	.4	.4	.4	.5	.8	1.0	.7	.6	.8	1.0	.9	.8	.8	.9	.7	.6	.5	.5
.7	.7	.7	.9	1.0	.9	1.0	.8	.9	.8	.9	.8	.5	.4	.7	.9	1.1	1.7	2.2	2.6	2.6	2.0	1.7	1.7	1.6	1.9	2.1	2.2	2.1	1.9	1.8	1.4	1.1	1.3	1.0	.8
.7	.7	.9	1.0	.8	.8	1.1	1.3	1.3	.8	.7	.6	.7	.7	.7	.8	.9	.9	1.0	1.3	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.3	1.2	1.1	1.0	1.2	.9	.7

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations

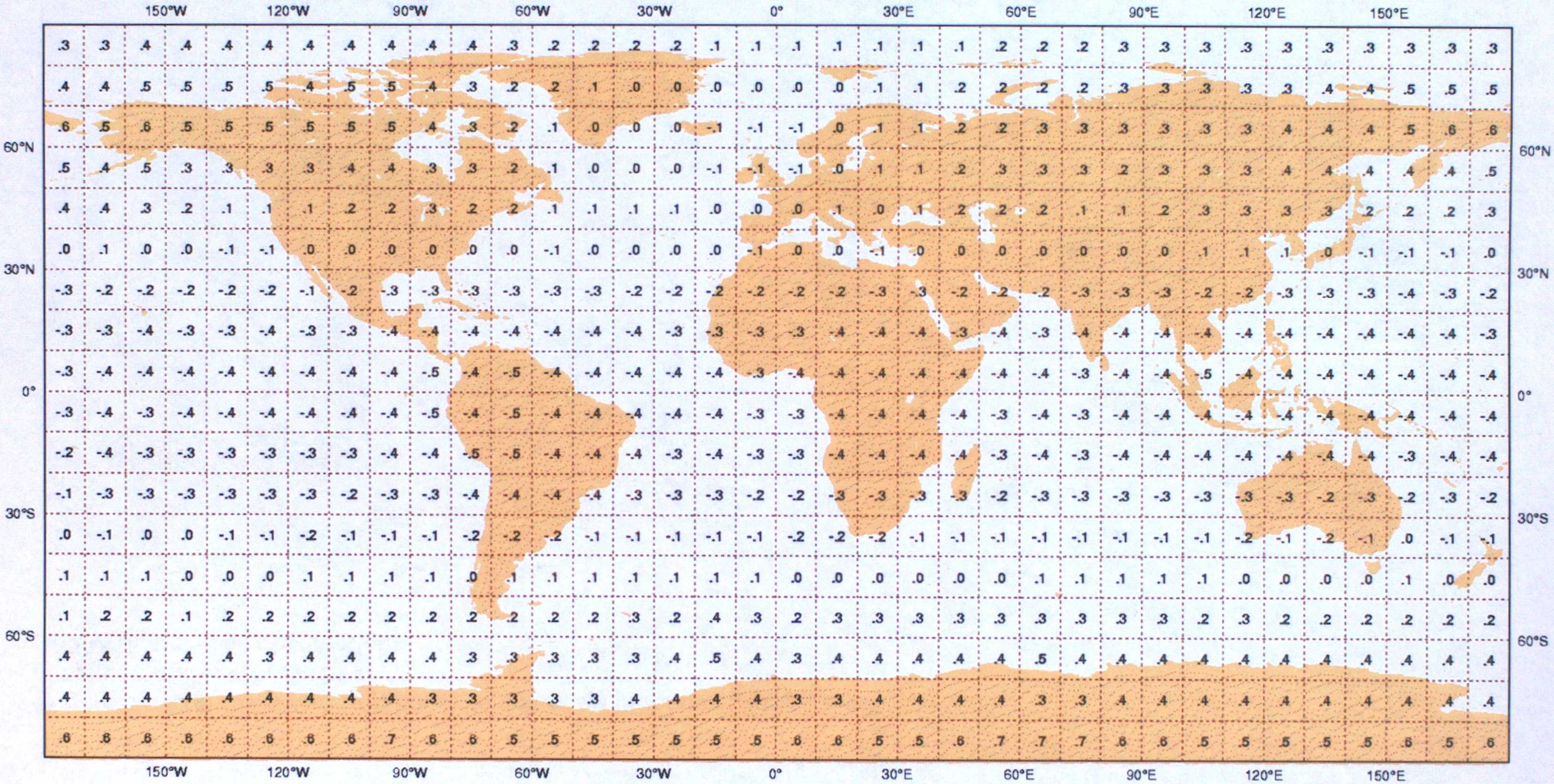

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1 .1 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .4 .5 .5 .5 .5 .4 .5 .5 .4 .3 .2 .2 .1 .0 .0 .0 .0 .0 .0 .1 .1 .2 .2 .2 .2 .3 .3 .3 .3 .3 .4 .4 .5 .5 .5
.6 .5 .6 .5 .5 .5 .5 .5 .5 .4 .3 .2 .1 .0 .0 .0 -.1 -.1 -.1 .0 .1 .1 .2 .2 .3 .3 .3 .3 .3 .3 .4 .4 .4 .5 .6 .6
.5 .4 .5 .3 .3 .3 .3 .4 .4 .3 .3 .2 .1 .0 .0 .0 -.1 -.1 -.1 .0 .1 .1 .2 .3 .3 .3 .2 .3 .3 .3 .4 .4 .4 .4 .4 .5
.4 .4 .3 .2 .1 .1 .1 .2 .2 .3 .2 .2 .1 .1 .1 .1 .0 .0 .0 .1 .0 .1 .2 .2 .2 .1 .1 .2 .3 .3 .3 .3 .2 .2 .2 .3
.0 .1 .0 .0 -.1 -.1 .0 .0 .0 .0 .0 .0 -.1 .0 .0 .0 .0 -.1 .0 .0 -.1 .0 .0 .0 .0 .0 .0 .0 .1 .1 .1 .0 -.1 -.1 -.1 .0
-.3 -.2 -.2 -.2 -.2 -.2 -.1 -.2 -.3 -.3 -.3 -.3 -.3 -.3 -.2 -.2 -.2 -.2 -.2 -.2 -.3 -.3 -.2 -.2 -.2 -.3 -.3 -.3 -.2 -.2 -.3 -.3 -.3 -.4 -.3 -.2
-.3 -.3 -.4 -.3 -.3 -.4 -.3 -.3 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.3 -.3 -.3 -.3 -.4 -.4 -.4 -.3 -.4 -.3 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.3
-.3 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.5 -.4 -.5 -.4 -.4 -.4 -.4 -.4 -.3 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.3 -.4 -.4 -.5 -.4 -.4 -.4 -.4 -.4 -.4 -.4
-.3 -.4 -.3 -.4 -.4 -.4 -.4 -.4 -.4 -.5 -.4 -.5 -.4 -.4 -.4 -.4 -.4 -.3 -.3 -.4 -.4 -.4 -.4 -.3 -.4 -.3 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4
-.2 -.4 -.3 -.3 -.3 -.3 -.3 -.3 -.4 -.4 -.5 -.5 -.4 -.4 -.4 -.3 -.4 -.3 -.3 -.4 -.4 -.4 -.4 -.3 -.4 -.3 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.3 -.4 -.4
-.1 -.3 -.3 -.3 -.3 -.3 -.3 -.2 -.3 -.3 -.4 -.4 -.4 -.4 -.3 -.3 -.3 -.2 -.2 -.3 -.3 -.3 -.3 -.2 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.2 -.3 -.2 -.3 -.2
.0 -.1 .0 .0 -.1 -.1 -.2 -.1 -.1 -.1 -.2 -.2 -.2 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.2 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.1 -.2 -.1 .0 -.1 -.1
.1 .1 .1 .0 .0 .0 .1 .1 .1 .1 .0 .1 .1 .1 .1 .1 .1 .1 .0 .0 .0 .0 .0 .0 .1 .1 .1 .1 .1 .0 .0 .0 .0 .1 .0 .0
.1 .2 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .4 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .2 .2 .2 .2 .2 .2
.4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .5 .4 .3 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.6 .6 .6 .6 .6 .6 .6 .6 .7 .6 .6 .5 .5 .5 .5 .5 .5 .5 .6 .6 .5 .5 .6 .7 .7 .7 .6 .6 .5 .5 .5 .5 .5 .6 .5 .6

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations

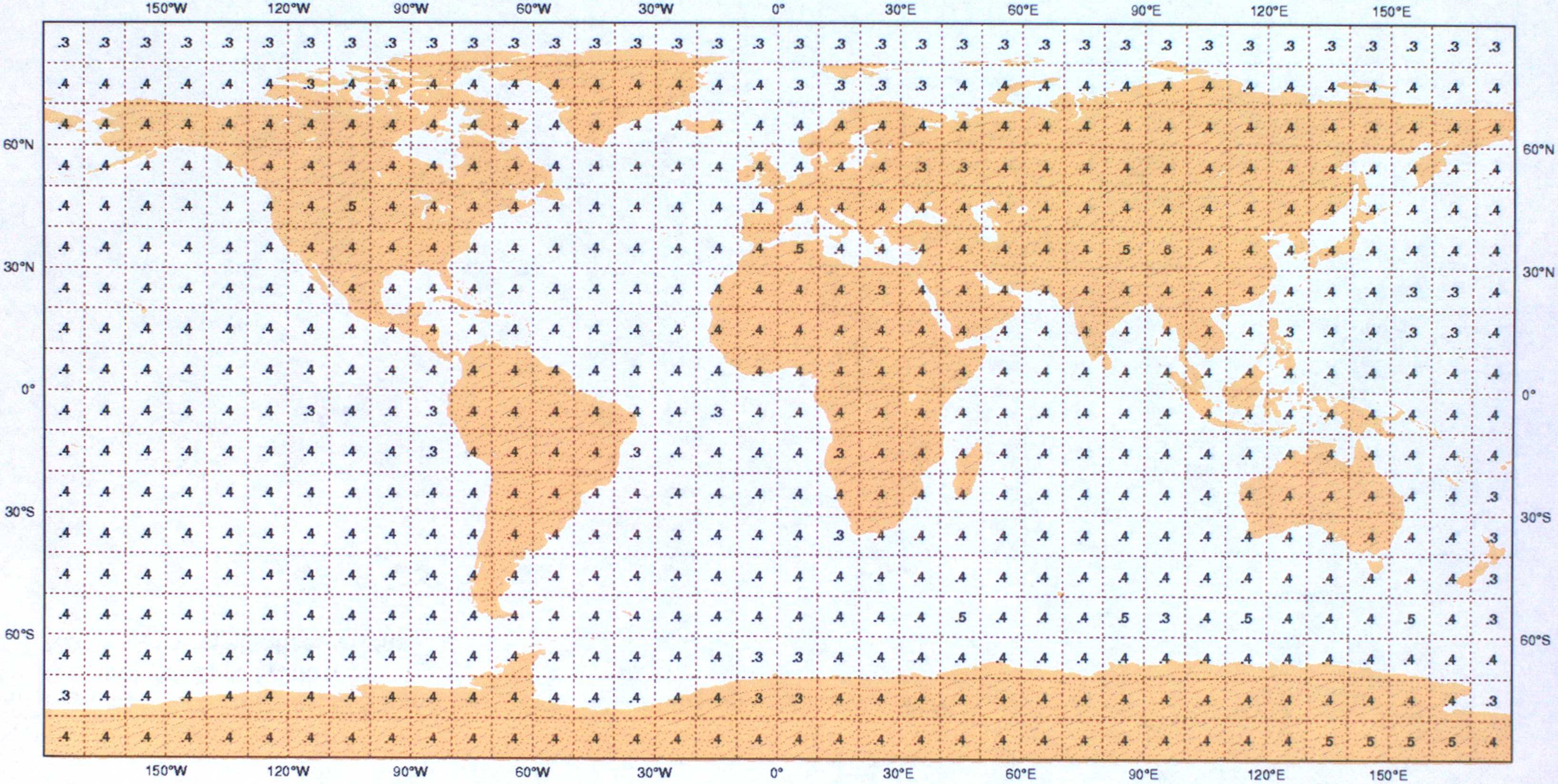
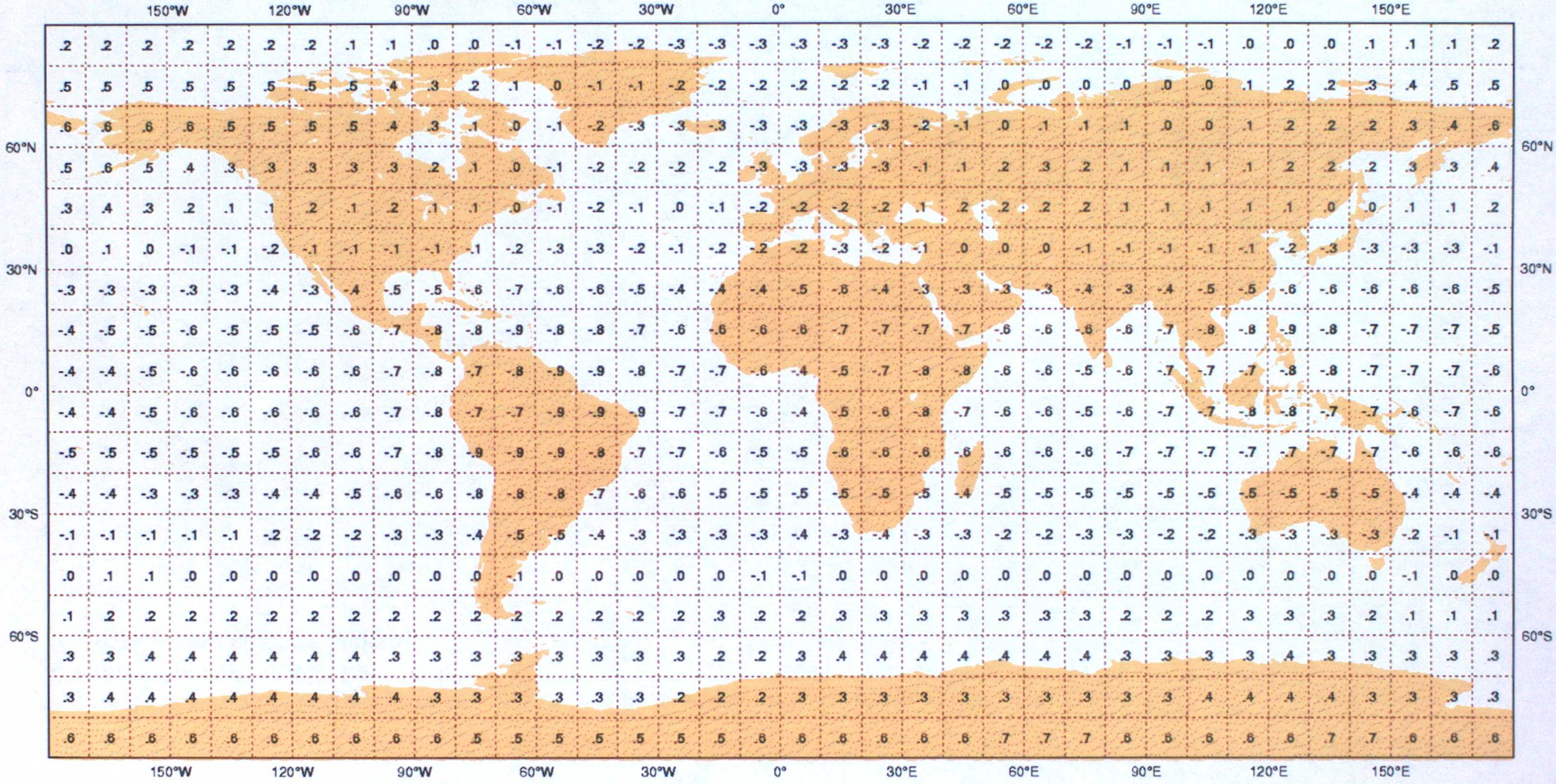
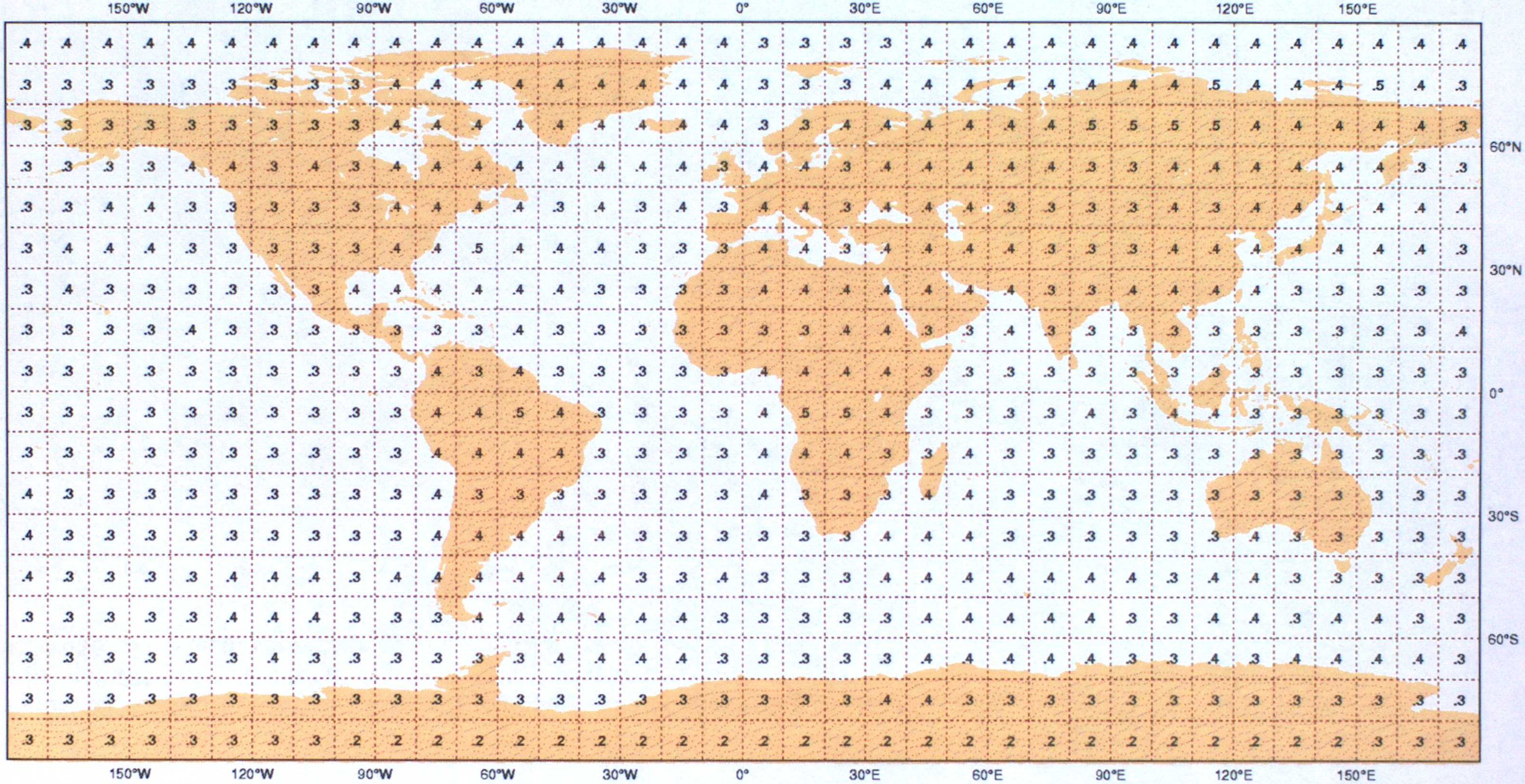

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .5 .6 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .3 .3 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .5 .3 .4 .5 .4 .4 .4 .5 .4 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



.2	.2	.2	.2	.2	.2	.2	.1	.1	.0	.0	-.1	-.1	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	.0	.0	.0	.1	.1	.1	.2
.5	.5	.5	.5	.5	.5	.5	.5	.4	.3	.2	.1	.0	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	.0	.0	.0	.0	.0	.0	.1	.2	.2	.3	.4	.5	.5
.6	.6	.6	.6	.5	.5	.5	.5	.4	.3	.1	.0	-.1	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.1	.0	.1	.1	.1	.0	.0	.1	.2	.2	.2	.3	.4	.6
.5	.6	.5	.4	.3	.3	.3	.3	.3	.2	.1	.0	-.1	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.3	-.1	.1	.2	.3	.2	.1	.1	.1	.1	.2	.2	.2	.3	.3	.4
.3	.4	.3	.2	.1	.1	.2	.1	.2	.1	.1	.0	-.1	-.2	-.1	.0	-.1	-.2	-.2	-.2	-.2	.1	.2	.2	.2	.2	.1	.1	.1	.1	.1	.0	.0	.1	.1	.2
.0	.1	.0	-.1	-.1	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.3	-.3	-.2	-.1	-.2	-.2	-.2	-.3	-.2	-.1	.0	.0	.0	-.1	-.1	-.1	-.1	-.1	-.2	-.3	-.3	-.3	-.3	-.1
-.3	-.3	-.3	-.3	-.3	-.4	-.3	-.4	-.5	-.5	-.6	-.7	-.6	-.6	-.5	-.4	-.4	-.4	-.5	-.6	-.4	-.3	-.3	-.3	-.3	-.4	-.3	-.4	-.5	-.5	-.6	-.6	-.6	-.6	-.6	-.5
-.4	-.5	-.5	-.6	-.5	-.5	-.5	-.6	-.7	-.8	-.8	-.9	-.8	-.8	-.7	-.6	-.6	-.6	-.6	-.7	-.7	-.7	-.7	-.6	-.6	-.6	-.6	-.7	-.8	-.8	-.9	-.8	-.7	-.7	-.7	-.5
-.4	-.4	-.5	-.6	-.6	-.6	-.6	-.6	-.7	-.8	-.7	-.8	-.9	-.9	-.8	-.7	-.7	-.6	-.4	-.5	-.7	-.8	-.8	-.6	-.6	-.5	-.6	-.7	-.7	-.7	-.8	-.8	-.7	-.7	-.7	-.6
-.4	-.4	-.5	-.6	-.6	-.6	-.6	-.6	-.7	-.8	-.7	-.7	-.9	-.9	-.9	-.7	-.7	-.6	-.4	-.5	-.6	-.8	-.7	-.6	-.6	-.5	-.6	-.7	-.7	-.8	-.8	-.7	-.7	-.6	-.7	-.6
-.5	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.7	-.8	-.9	-.9	-.9	-.8	-.7	-.7	-.6	-.5	-.5	-.6	-.6	-.6	-.6	-.6	-.6	-.6	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.6	-.6	-.6
-.4	-.4	-.3	-.3	-.3	-.4	-.4	-.5	-.6	-.6	-.8	-.8	-.8	-.7	-.6	-.6	-.5	-.5	-.5	-.5	-.5	-.5	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.4	-.4	-.4
-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.3	-.3	-.4	-.5	-.5	-.4	-.3	-.3	-.3	-.3	-.4	-.3	-.4	-.3	-.3	-.2	-.2	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.3	-.2	-.1	-.1
.0	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	-.1	.0	.0	.0	.0	.0	-.1	-.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.1	.0	.0
.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.2	.2	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.3	.3	.3	.2	.1	.1	.1
.3	.3	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.3	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3
.3	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.3	.3
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.7	.7	.7	.6	.6	.6	.6	.6	.7	.7	.6	.6	.6

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2005
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations


150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .5 .4 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .4 .4 .4 .3
.3 .3 .3 .3 .4 .4 .3 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3
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.3 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .5 .4 .4 .4 .3 .3 .3 .4 .4 .3 .4 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3
.3 .4 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3
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.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
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.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
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.4 .3 .3 .3 .3 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .3 .3 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .3 .3 .4 .4 .3 .4 .4 .3 .3
.3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .3 .3 .4 .3 .4 .4 .4 .4 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the wind observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13534	38.3	-32.3	P	732	0	1	1.0	-0.4	1.1
26505	70.8	-16.9	P	104	2	2	1.1	0.6	1.3
41521	17.7	-66.8	P	1925	1	71	1.7	-0.9	1.9
41539	23.6	-68.2	P	720	0	1	0.5	1.5	1.6
41540	41.6	-45.7	P	629	1	3	1.1	0.9	1.4
41541	24.4	-76.7	P	244	14	17	2.0	1.9	2.8
41542	25.5	-69.8	P	710	0	1	0.6	0.2	0.6
41543	22.7	-70.5	P	719	0	1	0.6	0.1	0.6
41544	21.4	-60.9	P	716	0	1	0.6	0.1	0.6
41545	23.4	-64.6	P	721	0	1	0.6	0.5	0.7
41546	16.4	-70.7	P	1350	0	48	0.8	1.1	1.3
41548	19.4	-60.1	P	1211	0	48	0.7	0.6	0.9
41551	10.1	-80.6	P	1253	0	44	0.8	0.2	0.8
41601	47.4	-23.8	P	344	0	1	1.3	-0.4	1.4
41663	17.3	-62.7	P	1729	0	100	0.6	-2.7	2.8
41665	17.0	-61.9	P	371	0	68	0.5	-2.1	2.1
41920	20.1	-67.5	P	114	4	96	2.2	8.2	8.5
41921	26.9	-72.4	P	554	7	100	4.6	5.4	7.1
41924	22.7	-73.2	P	571	1	31	1.5	0.1	1.5
41925	21.2	-73.4	P	559	1	29	0.8	-0.1	0.9
41927	26.0	-69.8	P	562	1	30	1.0	-0.2	1.0
41929	29.4	-70.2	P	664	1	35	0.8	0.4	0.9
41931	34.3	-72.3	P	539	0	28	1.0	-0.2	1.1
41932	18.8	-66.6	P	623	0	32	0.8	-0.1	0.8
41934	26.2	-68.8	P	649	0	33	0.5	-0.8	0.9
41935	21.0	-67.7	P	570	1	28	0.9	-0.2	0.9
41939	34.3	-59.0	P	636	1	100	1.1	-5.2	5.3
44547	57.8	-2.3	P	265	2	7	0.8	0.2	0.8
44549	53.0	-37.7	P	648	1	3	0.9	0.3	0.9
44550	49.8	-33.2	P	715	0	14	0.8	0.2	0.8
44601	53.5	-43.7	P	1037	0	38	0.7	0.0	0.7
44607	43.0	-43.8	P	1167	0	40	0.9	-0.3	1.0
44608	43.1	-40.1	P	729	0	1	0.9	-0.2	0.9
44609	52.2	-45.1	P	664	0	1	0.9	-0.2	0.9
44610	55.6	-38.6	P	722	0	1	0.5	-0.1	0.5
44611	52.6	-40.6	P	716	0	0	0.7	-0.1	0.7
44612	58.9	-21.9	P	656	0	1	0.5	0.1	0.6
44615	46.2	-48.6	P	720	0	0	0.7	0.0	0.7
44623	25.7	-50.2	P	741	0	6	0.5	0.1	0.5
44624	51.3	-25.6	P	276	0	43	0.6	-0.8	1.0
44625	58.9	-3.4	P	4	0	25	1.0	-2.1	2.3
44627	43.4	-24.6	P	781	0	17	0.7	-0.5	0.9
44628	30.3	-27.5	P	684	0	1	0.6	0.0	0.6
44630	32.0	-41.9	P	169	1	3	0.7	0.5	0.9
44721	54.0	-39.6	P	323	3	7	0.6	0.4	0.7
44722	46.8	-37.7	P	705	0	1	0.8	-0.2	0.9
44723	58.5	-35.1	P	721	0	2	0.5	-0.1	0.5
44725	53.7	-45.6	P	728	0	1	0.6	0.7	0.9
44726	50.1	-47.1	P	702	0	0	0.7	-0.2	0.7
44727	48.8	-40.1	P	716	0	1	1.0	0.0	1.0
44728	41.8	-49.6	P	722	0	0	0.9	0.5	1.0
44729	46.4	-52.2	P	63	0	0	1.0	1.4	1.7
44743	44.9	-13.1	P	613	0	3	0.6	-0.1	0.6
44745	48.0	-8.3	P	733	0	2	0.5	-0.3	0.6
44775	56.2	-28.1	P	860	1	53	0.7	-0.2	0.7
44777	21.9	-56.1	P	575	0	38	0.5	-0.1	0.5

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44778         32.5  -36.7     P        662     0    42   0.8    0.1   0.9
44779         51.9  -10.3     P          3     0     0   0.1   -0.1   0.2
56527         26.7  -82.0     P         23    96    96   0.0   -0.7   0.7
56539         26.7  -82.0     P         23    96    96   0.0   -0.7   0.7


IDENTIFIER    LAT.  LONG.   ELEM      NOBS   PGE  %REJ    SD   BIAS   RMS

56540         26.7  -82.0     P         20   100   100
62510         39.0  -21.3     P       1052     0    34   0.8    0.4   0.9
62511         48.5  -13.2     P        648     0     1   0.6    0.4   0.7
62512         43.0  -16.2     P        721     0     2   0.6   -0.1   0.6
62513         53.0  -31.7     P        727     0     1   0.7   -0.1   0.7

62514         60.2  -30.3     P        698     0     1   0.6    0.1   0.6
62556         34.1  -22.1     P        728     0     2   0.6    0.0   0.6
62557         35.2  -14.8     P        718     0     1   0.6    0.0   0.6
62560         44.9  -18.1     P        629     0     1   0.6    0.4   0.7
62562         51.5  -17.3     P        802     0    25   0.5    0.5   0.7

62563         54.9  -13.0     P        700     0     1   0.4   -0.2   0.5
62564         43.4  -21.9     P        718     0     3   0.9    0.6   1.0
62566         58.8  -18.0     P        722     0     1   0.6   -0.2   0.6
62567         47.1  -20.0     P        302     0     0   0.6   -0.6   0.9
62694         51.0  -10.4     P        624     0     3   1.1   -0.1   1.1

62801         30.8  -35.2     P        242     0    12   3.3   -0.8   3.4
64608         58.6  -58.9     P        132     0     3   1.4    0.2   1.4
64609         64.8  -31.0     P        721     0     2   0.8   -0.3   0.8
64610         62.4  -10.3     P        649     0     0   0.7   -0.1   0.7
64611         63.1  -27.9     P        696     0     0   0.5   -0.3   0.6

64612         60.7  -22.7     P        713     0     1   0.5   -0.8   0.9

IDENTIFIER    LAT.  LONG.   ELEM      NOBS   PGE  %REJ    SD   BIAS   RMS

41539         23.6  -68.2   SPEED      500     0   100   2.2    2.9   3.6
41540         41.6  -45.7   SPEED      562     0   100   3.0    2.9   4.2
41541         24.4  -76.7   SPEED        1     0   100   0.0   18.4  18.4
41542         25.5  -69.8   SPEED      674     0   100   1.8   -0.8   1.9
41543         22.7  -70.5   SPEED      698     0   100   1.8   -1.3   2.3

41544         21.4  -60.9   SPEED      690     0   100   1.3   -1.2   1.8
41545         23.4  -64.6   SPEED      705     0   100   1.4   -0.8   1.6
41595         25.5  -40.2   SPEED        1   100     0
41920         20.1  -67.5   SPEED        9    44   100   7.4    3.3   8.1
41921         26.9  -72.4   SPEED      501     2   100   3.3   -4.5   5.6

41924         22.7  -73.2   SPEED       31    32   100   8.7    4.2   9.6
41925         21.2  -73.4   SPEED      540     1   100   2.2   -4.1   4.7
41927         26.0  -69.8   SPEED        5    40   100   8.3   12.2  14.8
41929         29.4  -70.2   SPEED        8    38   100   2.8   -0.1   2.8
41931         34.3  -72.3   SPEED       13    54   100   5.3    9.7  11.0

41932         18.8  -66.6   SPEED        4    50   100   3.6   15.6  16.0
41934         26.2  -68.8   SPEED      123     0   100   2.0    1.7   2.6
41935         21.0  -67.7   SPEED        5    80   100   0.0   18.3  18.3
41939         34.3  -59.0   SPEED        3     0   100   8.4   -2.2   8.7
62511         48.5  -13.2   SPEED      545     0   100   2.1    2.3   3.1

62566         58.8  -18.0   SPEED      604     0   100   1.9    0.3   2.0

IDENTIFIER    LAT.  LONG.   ELEM      NOBS   PGE  %REJ    SD   BIAS   RMS

41539         23.6  -68.2   DIRN.      234     0     0  17.2   -0.8  17.3
41540         41.6  -45.7   DIRN.      493     0     0  20.6   -2.4  20.7
41542         25.5  -69.8   DIRN.      312     0     0  20.7   23.1  31.0
41543         22.7  -70.5   DIRN.      269     0     0  17.2   11.7  20.8
41544         21.4  -60.9   DIRN.      159     0     0  18.8   13.3  23.1

41545         23.4  -64.6   DIRN.      196     0     0  20.2    2.7  20.4
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41595	25.5	-40.2	DIRN.	1	100	0			
41920	20.1	-67.5	DIRN.	6	67	0	84.9	50.1	98.6
41921	26.9	-72.4	DIRN.	19	53	0	119.3	-18.2	120.7
41924	22.7	-73.2	DIRN.	17	59	0	69.9	13.1	71.1
41925	21.2	-73.4	DIRN.	8	63	0	12.1	1.9	12.2
41927	26.0	-69.8	DIRN.	3	67	0	0.0	31.9	31.9
41929	29.4	-70.2	DIRN.	7	43	0	75.1	78.1	108.4
41931	34.3	-72.3	DIRN.	13	54	0	36.6	35.8	51.2
41932	18.8	-66.6	DIRN.	4	50	0	63.3	91.1	110.9
41934	26.2	-68.8	DIRN.	13	0	0	15.0	19.7	24.8
41935	21.0	-67.7	DIRN.	4	100	0			
41939	34.3	-59.0	DIRN.	2	0	0	38.1	26.7	46.5
62511	48.5	-13.2	DIRN.	447	0	0	19.4	7.5	20.8
62566	58.8	-18.0	DIRN.	500	0	0	24.1	-2.2	24.2

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures:		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:40°N - 70°N, 60°W - 0°W.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.
GROSS ERROR LIMITS	:10.0 °C ; 60 m s^{-1} Vector Wind	
SELECTION CRITERIA	:N REP $\geq$ 20	

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	787	0	6	1.6	0.0	493	0	5	0	6.5	0.7
ACA	924	1	4	1.4	-0.2	498	0	5	0	7.1	0.6
AEA	452	0	3	1.6	-0.2	356	0	5	0	7.9	0.5
AEL	23	0	4	1.5	-0.8	22	0	14	0	13.9	-1.2
AFL	470	0	3	1.5	0.4	256	0	4	0	7.2	0.2
AFR	882	0	5	1.5	0.3	837	0	8	0	7.3	0.2
AJM	160	0	4	1.5	-0.4	122	0	4	0	7.7	1.3
AMT	174	0	9	1.6	0.3	172	0	10	0	7.8	-0.3
AMX	227	2	4	1.7	-0.1	175	0	5	0	9.0	1.2
AUA	33	3	45	4.9	3.5	31	0	6	0	8.3	-0.1
AVA	27	0	0	1.6	-0.1	27	0	4	0	13.0	0.9
AZA	246	1	5	1.7	0.0	184	0	8	0	8.9	1.2
BAL	255	1	7	1.7	-0.2	251	0	9	0	8.5	0.6
BAW	527	1	17	1.9	-0.5	304	0	15	0	6.5	0.3
BPA	466	0	9	2.0	0.5	475	0	10	0	8.5	0.8
BWA	165	1	7	2.3	-0.4	149	0	5	0	7.9	1.1
CFG	546	0	4	1.7	0.0	436	0	6	0	8.7	0.9
CGF	32	0	0	1.0	-0.2	30	0	0	0	5.2	1.1
CGH	41	0	0	1.3	-0.1	37	0	3	0	5.6	0.7
CKS	127	0	6	1.6	0.0	80	0	9	0	10.0	-1.0
CLX	312	0	2	1.5	-0.6	192	0	4	0	8.9	0.3
COA	236	0	19	1.6	-0.3	155	0	26	0	9.6	-0.3
CRL	450	0	5	1.7	0.3	415	0	7	0	8.0	0.8
CUB	143	0	4	1.7	-0.2	117	1	4	0	6.8	0.9
DAB	71	0	1	0.7	-0.2	66	0	2	0	4.1	0.8
DAI	94	0	7	1.1	0.4	81	0	6	0	4.1	1.0
DAL	670	0	13	1.7	-0.5	456	0	14	0	8.0	1.0
DCS	54	4	4	1.5	-0.4	38	0	5	0	8.4	0.4
DHL	140	1	100	6.7	-6.5	76	0	36	0	14.7	3.4
DLH	579	0	10	1.7	0.3	541	0	11	0	7.4	0.6
DRD	41	0	10	2.8	0.6	41	0	10	0	13.6	1.2
EDW	36	3	14	1.6	-0.5	29	0	17	0	9.7	-1.2
EEZ	155	0	10	1.7	0.2	156	0	8	0	5.5	0.7
EIA	216	1	13	1.6	0.1	197	0	100	0	20.8	5.1
ELY	43	0	7	2.7	-0.3	22	0	0	0	5.6	1.2
ETH	22	0	0	0.9	-0.4	23	4	4	0	4.1	0.8
FCA	108	4	11	2.1	-0.1	82	0	10	0	13.0	2.5
FDX	525	2	40	1.5	0.2	379	0	36	0	6.0	0.9
FGI	31	0	0	0.8	-0.3	27	0	0	0	3.4	-0.2
FGS	30	0	0	0.6	0.0	25	0	0	0	3.3	1.1
FIN	319	1	6	1.5	0.3	235	0	5	0	6.6	0.1
FWI	244	1	6	2.1	-0.4	241	0	6	0	9.1	0.1
GCO	131	1	11	1.6	0.1	129	0	28	0	13.4	3.6
GRL	81	0	1	1.5	0.3	71	0	4	0	6.6	0.9
GTI	195	4	22	2.4	1.0	178	0	16	0	7.1	1.4
HBI	24	0	0	1.2	0.0	20	0	0	0	4.0	1.1
HXL	123	1	6	1.4	-0.1	90	0	8	0	8.8	0.5
IBE	1335	1	4	1.6	0.2	1343	0	5	0	7.6	0.9
ICE	889	0	3	1.3	0.2	491	0	3	0	5.6	0.4
IWD	139	1	5	1.4	-0.1	139	0	5	0	7.6	0.9
KLM	671	0	2	1.7	-0.1	458	0	3	0	7.3	0.3
LAN	29	0	17	1.2	-0.2	31	0	16	0	4.9	-0.6
LDI	227	1	4	1.6	0.0	170	0	4	0	6.8	0.1
LOT	308	0	2	1.9	0.1	204	0	3	0	7.5	0.0
LTU	555	1	5	1.7	-0.2	432	0	5	0	7.0	1.1
MMZ	59	2	22	3.8	2.3	58	0	10	0	9.5	-0.8
MON	28	0	0	1.1	-0.2	24	0	0	0	5.4	1.0

MPD	122	1	3	1.8	0.1	101	0	4	0	7.1	0.3
MPH	359	0	2	1.7	-0.8	243	0	5	0	7.8	0.2

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
MYT	138	1	4	1.7	-0.2	90	0	2	0	6.1	1.6
NAO	28	0	0	1.2	-0.3	26	0	4	0	6.3	-0.9
NCA	34	0	0	0.9	0.4	29	0	0	0	5.6	-0.5
NOS	37	0	8	2.2	-0.2	29	0	7	0	7.7	0.9
NVR	55	0	2	1.5	-0.3	32	0	6	0	8.0	-0.1
NWA	1581	1	4	1.8	0.5	1511	0	4	0	7.9	0.3
OAE	305	0	6	1.4	-0.2	178	0	43	0	9.8	2.5
OOM	111	0	3	1.6	-1.0	75	0	4	0	9.1	0.6
OYK	80	0	39	0.9	0.0	73	0	41	0	4.1	0.9
PAC	151	1	13	2.0	-0.1	121	0	12	0	8.8	0.2
PLM	97	1	3	1.9	0.6	89	0	4	0	9.3	1.9
RAM	216	1	6	2.0	0.6	134	1	100	0	8.1	-0.8
RCH	234	1	100	3.2	-1.0	175	1	100	0	12.4	2.1
RRR	52	4	13	2.1	-1.3	52	0	12	0	8.3	0.4
RZO	160	1	3	1.7	-0.5	145	0	5	0	7.4	0.8
SER	65	2	11	1.4	0.2	56	0	11	0	4.1	0.9
SEU	111	0	5	1.8	-0.3	95	0	6	0	7.7	0.6
TAP	196	1	4	1.6	-0.5	147	1	4	0	7.7	2.0
TCX	33	3	6	1.9	0.2	27	0	4	0	6.7	1.1
TSC	57	5	11	1.9	-0.6	33	0	0	0	6.2	-0.1
TSO	32	0	19	2.3	-0.8	31	0	13	0	4.9	-0.1
TUB	89	0	3	1.6	-0.1	41	0	7	0	9.9	0.9
UAE	28	4	4	1.8	0.0	28	0	4	0	5.9	0.3
UAL	69	1	68	1.7	-0.8	64	0	67	0	8.8	1.7
UPS	947	0	50	1.4	0.1	924	0	51	0	6.5	0.5
USA	105	1	6	1.8	-0.1	77	0	6	0	7.8	1.0
VIR	169	0	4	1.6	-0.1	105	0	4	0	6.5	0.6
VPB	38	0	8	2.5	0.0	26	0	8	0	11.7	0.8
WOA	217	2	14	1.8	0.4	188	0	14	0	8.4	0.7
XLA	85	0	4	1.6	0.0	72	0	6	0	9.5	1.4

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
EU	28776	0	21	1.1	0.2	28776	0	19	0	4.4	0.6

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	793	1	10	1.5	0.2	619	0	9	0	5.1	0.9

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
	21498	0	33	1.3	0.1	21498	0	28	0	4.8	0.5

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.1	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DASAP1	12	Z	100	1	0	0.0	26.0	26.0
DBBH	00	Z	100	11	0	8.8	15.5	12.7
DBBH	12	Z	100	7	0	13.2	18.5	13.0
EASAP6	12	Z	100	1	0	0.0	18.0	-18.0
EBUQ	12	Z	100	8	0	8.2	9.7	-5.1
ELML7	00	Z	100	10	0	8.8	8.8	0.2
ELML7	12	Z	100	10	0	17.4	18.1	4.9
FQFL	00	Z	100	4	0	6.0	7.4	4.3
FQFL	12	Z	100	9	0	15.2	24.9	19.7
FQFM	00	Z	100	6	0	13.7	16.5	-9.2
FQFM	12	Z	100	6	0	9.2	9.4	-1.7
HPII	00	Z	100	3	0	14.6	27.0	-22.7
HPII	12	Z	100	5	0	16.6	29.5	-24.4
KRPD	12	Z	100	5	0	17.4	23.7	16.0
LDWR	00	Z	100	28	0	12.2	13.6	-6.1
LDWR	12	Z	100	28	0	18.2	19.5	-7.0
V2XM	00	Z	100	6	0	16.7	25.7	19.5
V2XM	12	Z	100	8	0	25.5	38.5	28.9
WAAH	00	Z	100	10	0	16.4	34.6	30.5
WAAH	12	Z	100	12	0	54.2	73.9	50.3
WPKD	00	Z	100	1	0	0.0	23.0	23.0
WPKD	12	Z	100	2	1	4.0	20.4	20.0
ZCBE7	12	Z	100	4	0	13.2	14.9	7.0
ZCBF3	00	Z	100	2	0	0.5	31.5	31.5
ZCBF3	12	Z	100	2	0	12.0	49.5	48.0
ZCBP6	00	Z	100	12	0	18.8	27.7	20.3
ZCBP6	12	Z	100	12	0	29.9	42.3	29.9
03953	00	Z	100	30	0	13.0	13.0	1.0
03953	12	Z	100	30	0	13.4	15.4	7.7
04018	00	Z	100	29	0	10.6	10.6	0.4
04018	12	Z	100	30	0	12.9	15.7	8.9
04220	00	Z	100	29	0	18.5	19.1	-4.7
04220	12	Z	100	29	0	15.7	15.8	-2.2
04270	00	Z	100	29	0	15.3	15.8	4.0
04270	12	Z	100	27	0	9.5	9.6	-1.3
04339	00	Z	100	30	0	10.5	10.9	-2.9
04339	12	Z	100	30	0	12.0	12.4	-3.4
04360	00	Z	100	29	0	6.3	7.7	-4.4
04360	12	Z	100	29	0	10.0	12.0	-6.7
08001	00	Z	100	24	0	7.6	18.1	16.4
08001	12	Z	100	23	0	8.5	20.9	19.1
08508	00	Z	100	6	0	14.5	31.5	28.0
08508	12	Z	100	26	0	14.6	16.9	8.5
08522	12	Z	100	25	0	16.6	22.6	15.4
08594	12	Z	100	21	0	16.1	20.7	13.0
71600	00	Z	100	30	0	17.7	21.4	-12.0
71600	12	Z	100	30	0	15.0	16.8	-7.5
72201	00	Z	100	28	0	16.2	29.1	24.2
72201	12	Z	100	30	0	15.2	31.2	27.3
72402	00	Z	100	27	0	13.2	19.0	13.6
72402	12	Z	100	28	0	9.1	9.3	-1.8
74494	00	Z	100	26	0	18.1	20.7	-10.0
74494	12	Z	100	28	0	14.0	23.7	-19.1
78016	00	Z	100	26	1	14.5	27.5	23.3
78016	12	Z	100	28	0	14.4	33.7	30.4

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DASAP1	12	Z	500	1	0	0.0	11.0	11.0
DBBH	00	Z	500	12	0	6.3	8.0	5.0
DBBH	12	Z	500	9	0	6.5	7.1	2.9
EASAP6	12	Z	500	1	0	0.0	11.0	-11.0
EBUQ	12	Z	500	10	0	5.9	9.0	-6.8
ELML7	00	Z	500	10	0	7.8	8.6	-3.5
ELML7	12	Z	500	10	0	9.6	10.3	-3.7
FQFL	00	Z	500	4	0	8.0	8.2	1.5
FQFL	12	Z	500	10	0	7.9	8.0	1.4
FQFM	00	Z	500	6	0	2.4	11.8	-11.5
FQFM	12	Z	500	7	0	7.5	9.7	-6.1
HPII	00	Z	500	3	0	18.8	28.9	-22.0
HPII	12	Z	500	6	1	11.2	19.3	-15.7
KRPD	12	Z	500	6	0	12.0	17.8	13.2
LDWR	00	Z	500	29	0	8.4	9.1	-3.4
LDWR	12	Z	500	28	0	10.7	11.0	-2.4
V2XM	00	Z	500	8	0	12.4	28.9	26.1
V2XM	12	Z	500	9	0	18.3	34.4	29.1
WAAH	00	Z	500	10	0	8.8	26.8	25.3
WAAH	12	Z	500	11	1	12.2	27.3	24.5
WPKD	00	Z	500	2	0	1.5	11.6	11.5
WPKD	12	Z	500	3	0	9.4	9.5	1.7
ZCBE7	00	Z	500	3	0	7.3	7.3	0.7
ZCBE7	12	Z	500	4	0	13.2	14.0	4.5
ZCBF3	00	Z	500	2	0	1.5	6.7	6.5
ZCBF3	12	Z	500	2	0	2.0	14.1	14.0
ZCBP6	00	Z	500	12	0	11.1	31.6	29.6
ZCBP6	12	Z	500	13	0	27.9	46.1	36.8
03953	00	Z	500	30	0	7.5	7.6	1.1
03953	12	Z	500	30	0	8.6	9.2	3.3
04018	00	Z	500	30	0	8.0	9.5	5.1
04018	12	Z	500	30	0	10.1	11.8	6.0
04220	00	Z	500	30	0	8.2	9.2	4.3
04220	12	Z	500	30	0	11.0	11.2	2.3
04270	00	Z	500	29	0	8.3	10.2	6.0
04270	12	Z	500	28	0	9.2	9.4	1.6
04339	00	Z	500	30	0	8.4	11.0	7.0
04339	12	Z	500	30	0	9.4	12.4	8.0
04360	00	Z	500	30	0	8.3	8.9	3.4
04360	12	Z	500	30	0	8.0	9.0	4.0
08001	00	Z	500	27	1	6.9	8.4	4.7
08001	12	Z	500	26	0	6.8	9.4	6.5
08508	00	Z	500	6	0	17.2	22.6	14.7
08508	12	Z	500	26	0	12.2	13.0	-4.5
08522	12	Z	500	29	0	16.5	16.8	3.0
08594	12	Z	500	24	0	4.8	4.9	-0.9
71600	00	Z	500	30	0	7.5	7.8	2.3
71600	12	Z	500	30	0	9.4	9.8	-2.5
72201	00	Z	500	30	0	6.3	6.3	0.1
72201	12	Z	500	30	0	6.9	8.0	-4.2
72402	00	Z	500	27	0	6.7	8.8	5.8
72402	12	Z	500	28	0	6.8	7.0	-1.6
74494	00	Z	500	28	0	10.3	11.2	-4.4
74494	12	Z	500	29	0	9.7	10.8	-4.7
78016	00	Z	500	27	1	6.2	9.5	7.1

78016	12	Z	500	30	0	8.7	10.4	5.7

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.2	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DASAP1	12	V	100	1	0	0	3.8	-3.8	0.1
DBBH	00	V	100	11	0	0	9.5	1.5	-1.9
DBBH	12	V	100	7	0	0	6.3	-0.3	0.3
EASAP6	12	V	100	1	0	0	0.7	0.0	0.7
EBUQ	12	V	100	6	0	0	7.3	-0.7	-2.5
ELML7	00	V	100	5	0	100	6.6	-1.7	-1.4
ELML7	12	V	100	7	0	100	9.3	-5.0	0.3
FQFL	00	V	100	4	0	0	3.6	-1.4	1.6
FQFL	12	V	100	8	0	0	6.0	-0.4	0.1
FQFM	00	V	100	6	0	0	4.3	-1.2	0.5
FQFM	12	V	100	6	0	0	4.6	-1.4	0.6
HPII	00	V	100	3	0	0	3.8	-1.7	1.1
HPII	12	V	100	5	0	0	5.7	3.4	2.1
KRPD	12	V	100	2	0	100	8.3	-3.0	5.9
LDWR	00	V	100	28	0	0	2.9	-0.3	-0.5
LDWR	12	V	100	28	0	0	2.6	0.7	-0.5
V2XM	00	V	100	6	0	0	3.3	1.4	0.3
V2XM	12	V	100	7	0	0	2.8	0.6	0.3
WAAH	00	V	100	8	0	100	4.3	-0.1	0.7
WAAH	12	V	100	11	0	100	3.8	2.1	0.2
WPKD	00	V	100	1	0	0	0.5	0.1	0.5
WPKD	12	V	100	3	0	0	2.5	0.8	-1.6
ZCBP6	00	V	100	12	0	100	3.6	-0.1	0.5
ZCBP6	12	V	100	11	0	100	3.1	1.1	1.7
03953	00	V	100	30	0	0	3.2	0.7	0.2
03953	12	V	100	30	0	0	3.6	-0.5	-0.3
04018	00	V	100	29	0	0	2.6	0.7	-0.1
04018	12	V	100	30	0	0	2.9	0.6	-0.5
04220	00	V	100	24	0	0	2.8	0.0	0.0
04220	12	V	100	29	0	0	3.4	0.0	0.4
04270	00	V	100	29	0	0	3.7	-0.8	1.2
04270	12	V	100	27	0	0	4.2	0.3	0.1
04339	00	V	100	24	0	4	6.8	0.4	1.0
04339	12	V	100	29	0	3	7.1	-0.7	0.8
04360	00	V	100	29	0	0	3.5	0.2	0.7
04360	12	V	100	27	0	0	3.1	0.1	0.8
08001	00	V	100	24	0	0	4.5	0.0	1.4
08001	12	V	100	21	0	0	4.8	-1.7	-1.1
08508	00	V	100	4	0	0	4.7	-1.7	-1.3
08508	12	V	100	11	0	0	4.2	0.2	1.1
08522	12	V	100	20	0	0	5.8	-1.1	-1.6
08594	12	V	100	21	0	100	4.6	0.4	2.4
71600	00	V	100	29	0	0	3.1	0.1	1.1
71600	12	V	100	30	0	0	4.2	1.8	1.7
72201	00	V	100	28	0	0	4.7	1.7	0.4
72201	12	V	100	27	0	0	4.8	1.1	0.7
72402	00	V	100	29	0	0	4.4	0.2	-0.3
72402	12	V	100	30	0	0	4.4	0.9	-0.3
74494	00	V	100	23	0	100	3.0	-0.8	1.4
74494	12	V	100	27	0	100	3.9	-1.0	1.7
78016	00	V	100	21	0	4	11.3	0.4	0.8
78016	12	V	100	22	0	0	7.4	1.4	2.0

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Mar 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.2	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DASAP1	12	V	500	1	0	0	1.8	-0.9	-1.6
DBBH	00	V	500	11	0	0	5.2	1.4	0.6
DBBH	12	V	500	9	0	0	4.1	1.9	1.0
EASAP6	12	V	500	1	0	0	2.3	0.6	-2.2
EBUQ	12	V	500	8	0	0	4.4	0.1	-2.7
ELML7	00	V	500	10	0	100	8.9	-5.1	-1.2
ELML7	12	V	500	10	0	100	9.6	-4.9	-2.7
FQFL	00	V	500	5	0	20	12.4	3.1	-2.6
FQFL	12	V	500	10	0	0	5.3	0.3	2.7
FQFM	00	V	500	6	0	0	3.8	-1.9	-1.5
FQFM	12	V	500	8	0	0	3.8	0.4	1.4
HPII	00	V	500	3	0	0	3.3	0.2	0.5
HPII	12	V	500	7	0	0	5.8	-1.9	-1.0
KRPD	12	V	500	2	0	100	12.4	-11.0	4.9
LDWR	00	V	500	29	0	0	3.3	1.3	-0.6
LDWR	12	V	500	28	0	0	3.0	-0.1	-0.4
V2XM	00	V	500	8	0	0	3.9	0.3	0.3
V2XM	12	V	500	9	0	0	3.5	-0.4	-0.1
WAAH	00	V	500	10	0	100	3.9	-0.2	0.1
WAAH	12	V	500	12	0	100	4.1	0.5	0.2
WPKD	00	V	500	2	0	0	3.2	-2.4	-0.8
WPKD	12	V	500	3	0	0	2.7	-0.8	-2.4
ZCBP6	00	V	500	12	0	100	4.0	0.1	-0.7
ZCBP6	12	V	500	13	0	100	3.7	-0.9	1.7
03953	00	V	500	30	0	0	3.8	-0.4	-0.4
03953	12	V	500	30	0	0	4.1	0.6	-0.7
04018	00	V	500	30	0	0	4.8	-0.3	0.0
04018	12	V	500	30	0	0	4.5	-0.6	-0.6
04220	00	V	500	30	0	0	4.2	0.2	-0.5
04220	12	V	500	30	0	0	4.5	0.5	-0.2
04270	00	V	500	29	0	3	5.0	0.3	1.3
04270	12	V	500	28	0	0	4.1	1.0	0.3
04339	00	V	500	24	0	0	4.6	1.3	0.3
04339	12	V	500	27	0	0	5.9	-0.4	0.5
04360	00	V	500	30	0	0	4.5	-0.3	-0.3
04360	12	V	500	30	0	0	4.6	0.1	-0.6
08001	00	V	500	28	0	0	3.9	0.5	0.6
08001	12	V	500	25	0	0	3.8	0.4	-0.1
08508	00	V	500	4	0	0	4.1	0.1	-0.8
08508	12	V	500	11	0	0	6.9	1.0	-1.4
08522	12	V	500	28	0	0	4.4	0.4	-1.2
08594	12	V	500	24	0	100	3.3	0.3	0.4
71600	00	V	500	30	0	0	4.3	-0.1	0.3
71600	12	V	500	30	0	0	4.9	0.9	0.9
72201	00	V	500	29	0	6	6.9	-0.3	0.0
72201	12	V	500	30	0	0	3.2	0.2	-0.3
72402	00	V	500	29	0	0	4.0	0.7	-1.3
72402	12	V	500	30	0	0	4.1	1.0	0.1
74494	00	V	500	28	0	0	3.9	-0.3	1.0
74494	12	V	500	27	0	0	3.0	-0.5	0.9
78016	00	V	500	28	0	0	3.9	1.5	-0.3
78016	12	V	500	30	0	0	4.8	1.4	0.8

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45